Telephony.

THE AMERICAN TELEPHONE JOURNAL

Comprising Telephony, American Telephone Journal, Telephone Weekly, Telephone Magazine, Telephone Securities, The Telephone, Sound Waves

PUBLISHED WEEKLY BY THE TELEPHONY PUBLISHING COMPANY

MONADNOCK BLOCK, CHICAGO 80 WALL STREET, NEW YORK

H. B. McMEAL, PRESIDENT W. H. GRAFFIS, VICE-PRESIDENT F. S. KENFIELD, VICE-PRESIDENT H. D. FARGO, SECRETARY AND TREASURER
H. B. McMEAL. Editor F. H. REED and R. H. HOLBROOK, Associate Editors J. C. KELSEY, Financial Editor
J. R. HASTIE, Asst. Advertising Mgr. W. H. GRAFFIS, Advertising Mgr. W. E. RAYMOND, Subscription Mgr

Entered as second-class matter September 4, 1908, at the post office at Chicago, Ill., under act of March 3, 1897

Volume 60
Number 17

CHICAGO, SATURDAY, APRIL 29, 1911

Subscription - 10 Cents a Copy
$3 a Year U. S., Cuba and Mexico
$4 Canada, $5 Other Countries

Chicago Open for Independent Toll Business.

On Thursday, April 20, 1911, arrangements were concluded for connecting the Independent telephone system of Chicago with surrounding cities and towns over Independent toll lines. Remember the date! Ten years from now it will be in every Independent telephone man's mind, holding the same relation to 1894 that 1776 bears to 1492 among the dates of our National history. We shall all commemorate this event that now stirs the blood and invigorates the thought of every Independent telephone man as he learns the great news.

Chicago has realized the necessity of connection with local Independent systems of the Middle West. It has found that the only way to obtain these connections, which are equally desired by the outside people, is to use Independent toll lines. In other words, the Independents are the exclusive possessors of something which Chicago needs and can obtain from nobody else. Chicago's business men are now in a position to get it, in spite of the selfish opposition to their interests so long shown by the company which wishes to maintain a monopoly of the wire business of this great metropolis.

To the Independent telephone man outside the city, this news brings first of all an impulse to rejoice and celebrate. It is an event which has been hoped for these many years. Some have fought for it and others have maintained their interest and cheered on those engaged in the battle. But great as the victory has been for Independent telephony, it has been won by no spectacular methods, but by slow, patient, quiet, skillful work. It is fitting that the celebration should be a consummation, pushed to a tremendous practical success by more earnest, carefully planned work.

The legal arrangements for the Independent entry into Chicago have been completed. The physical arrangements need to be made. Next week a single circuit will be working. Within thirty days construction on many circuits, and the switchboard, should be under way, in accordance with the contract. The completion of this work will give every telephone company connecting directly or indirectly with the Inter-State lines an opportunity to route messages into Chicago.

Of course a metallic connection is only an element in commercial toll service. All the Independent companies in a position to do business with Chicago will find that they are dealing with absolutely new problems. The mere rearrangement of plant which will be necessary in the entire territory will cost many hundreds of thousands of dollars. A great variety and amount of new equipment will have to be furnished. The engineering and business problems will require the attention of men experienced in special lines, and it will be economy of capital to employ the services of the most competent engineers to work out transmission and routing problems. A tremendous impetus will be given to the formation of the Illinois Clearing House, which now becomes doubly necessary.

It should not be overlooked that the direct value from additions to toll earnings and the indirect value of the prestige assured to Independent telephony by this Chicago entry will be an influence for expansion of exchanges in thousands of cities and towns. Closer unity of Independent telephone companies, an increase of mutual confidence, and the drawing away from the Bell organization of some of its loosely held sub-licensees will be a natural result. It is, indeed, impossible to measure the direct money value to the entire Independent industry of the effect along these lines which will be produced by the development of the Chicago terminal and of its connections to outside points. Unquestionably it runs up into the millions of dollars. This is not an "intangible" value, but an actual value which a hard-headed business man can measure in terms of exchange service and toll revenue which will be added, and increased investment which will be made in poles, wire, switchboards, telephones and the countless accessories which go to make up additions to a going telephone plant. This feature, of course, interests the Independent manufacturer, and the certainty of the lift which the Chicago business will give all along the line should bring good cheer to all engaged in the producing and distributing branches of the industry.

The Chicago connection is assured. And it has come to stay. Mr. C. O. Frisbie, president of the Illinois Tunnel Co., and Mr. Fred A. Dolph, receiver of the Inter-State Telephone & Telegraph Co., have given TELEPHONY absolute assurance of the permanent and binding character of the contract into which their companies have entered, as may be seen from examination of the articles reproduced from the contract in our pages and the statement from Mr. Frisbie. The contract binds not only these companies, but their successors. The dissolution of the receiverships will leave the contract still binding on the two properties, and the permanence of the business relations between them is thus assured.

This opening of Chicago to Independent toll lines is the most important event in the history of the industry.

Value of TELEPHONY'S Directory to the Operator.

"TELEPHONY'S Directory of the Telephone Industry" is printed and ready for distribution. Within a short time every telephone system in the world will receive, free, one copy of the "Telephone Buyer's Guide," which contains a complete list of firms manufacturing or selling supplies or equipment used in the telephone business.

One can readily appreciate how valuable it is to the operating man to possess a telephone directory listing hundreds of manufacturing firms and supply houses selling telephone material, with a great majority of the better firms carrying advertisements giving a detailed clue to the nature of their stock. Such a book enables a buyer to obtain complete information and all the advantages of competitive quotations, in purchasing material for any desired work. In fact, so interesting and complete is the advertising section of the book that it is in itself practically an illustrated guide to the construction and complete fitting out of a telephone system; while the literature issued by the various firms advertising and otherwise listed in this book would, undoubtedly, if intelligently read and followed up, furnish a very practical education to even a beginner in telephony, and greatly add to the efficiency of the most experienced manager, engineer, superintendent or foreman. For these and many other reasons the manager, purchasing agent, engineer, construction and equipment men, or the one man who is the whole thing in the little rural line company, will equally find it to their advantage to make a close friend of the "Telephone Buyer's Guide," which includes an alphabetical list of manufacturers, dealers, engineers, jobbers, supply dealers and manufacturers' agents.

"P. De Medici" on the Rochester Fiasco.

The Bell Press Bureau is singularly unfortunate in its selection of writers to champion its cause. First it was a Jenkins now a "P. De Medici." Yes, Hortense, it does sound like a Dr. Munyon preparation, but it isn't. It is the pen name of a young man who gets a lot of stuff in the *United States Investor*, a paper published weekly in New York City. And "P. De Medici," as the man in the street puts it, writes all over the lot.

In the current issue "P. De Medici" plunges boldly into the Rochester situation, abuses those who prevented the turn-over to the Bell and weeps over the unfortunate investors who are thereby condemned to hold their securities for a time. "The offer made by the Bell people was positively philanthropic in its measure of liberality," wails "P. De Medici" bitterly. But this is not startling news; the Bell's offers for competing plants have usually been "positively philanthropic." As a result they have acquired in the past twelve or fourteen years a choice assortment of decayed and worn out Independent plants, which have, in the main, been speedily replaced by effective modern systems, after which competition again went merrily and vigorously on. Also, largely as a result of this excessive philanthropy on the part of the Bell, something like half of the Bell subsidiary companies are now on the financial rocks, with small hope of ever getting off.

In this particular case, however, the Bell's offer was far from "philanthropic." It offered $50 per share for the stock of the Rochester Telephone Co., for example. B. G. Hubbell is president of the Federal Telephone & Telegraph Co., of Buffalo, which is one of the largest stockholders in the Rochester company. It is a fair presumption that Mr. Hubbell knows what he is talking of when he discusses the Rochester company. He says that the stock is earning today, according to the company's sworn statement, over 22 per cent. He declares that there was arbitrarily deducted "an extraordinary depreciation fund equal to 10 per cent. of its stock, leaving about 12 per cent. profit for the year 1910." Certainly holders of that stock need no commiseration, nor do the bond holders, who have not yet missed an interest day.

And then "P. De Medici," with that curious blindness or carelessness which so frequently afflicts Bell Press Bureau writers, himself throws in a substantial endorsement given by "an official of a national bank in Rochester." This official is quoted as follows: "In reply to your letter I beg to say we believe the Rochester Telephone Co., to be in good condition and as having good prospects." Singular, isn't it, under such circumstances, that the security holders should be so ready to give up their holdings? But, somehow, they do not seem to have been in such a driving hurry to do so, although "P. De Medici" declares stoutly: "It is well known that more than a majority of the stock, as well as bond holders of the various companies were enthusiastically in favor of accepting the offer made by the Bell Telephone Co."

"It is incidentally worthy of note," says "P. De Medici," "that the offer of the Bell companies to buy this group of Independent companies was made in a commendably open and above-board manner." That is indeed worthy of note. It occurs once in a blue moon. Usually the gum-shoe method prevails.

Warningly "P. De Medici" says: "If a deal is made in the future the initiative will have to be taken by the security holders themselves." Judging by the "enthusiastic" response with which the Bell plan was received by the security holders this time, the Bell should prepare itself for a long wait.

Contract Signed Opening Chicago to Independent Lines

Inter-State Independent, of Aurora, Reaching Through Its Connections Over 2,000,000 Independent Telephone Users in Four States, Perfects Agreement to Enter Chicago With Its Toll Lines—Deal of Far-Reaching Importance and Significance to Entire Industry

By virtue of a contract just entered into between the receivers of the Illinois Tunnel Co. and the receivers of the Inter-State Independent Telephone & Telegraph Co. of Aurora, Chicago is soon to be thrown open to the Independent telephone systems of the country, and Chicago telephone users are to have access to upwards of 2,000,000 additional telephones in the territory adjoining that city.

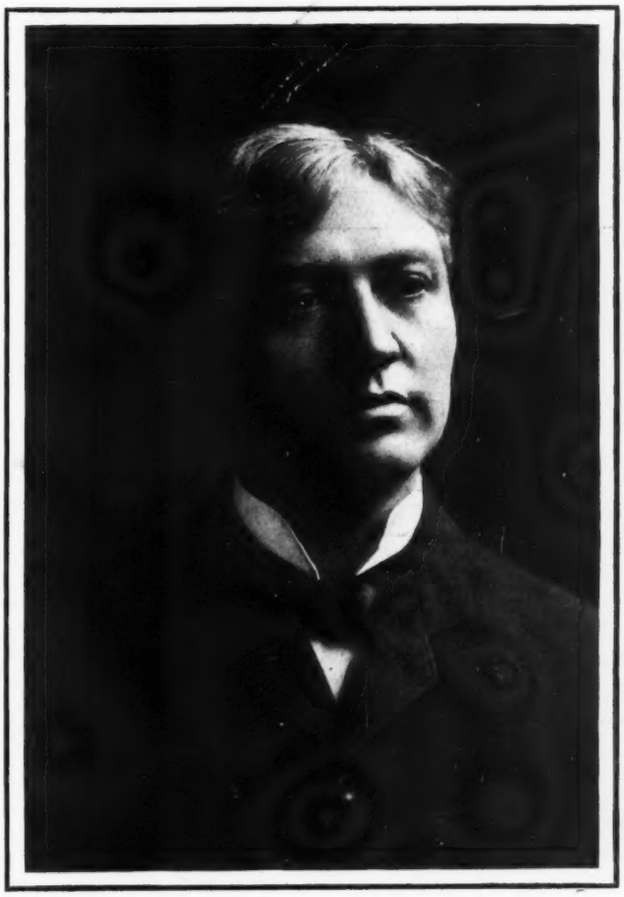
The contract was consummated pursuant to an order handed down by Judge Kohlsaat, in the United States Circuit Court, which has jurisdiction over the receivers of both companies.

Since the settlement of the famous Berliner suit there has been no event in the telephone field of such far-reaching importance as this opening of Chicago to the Independents. No other will equal it, or even approach it until New York City is also made a competitive point and the Independent lines tap the metropolis. Not only will the transaction firmly cement the various operating Independent interests in the territory immediately affected, but it will have a highly beneficial moral effect upon the Independent industry throughout the entire country. It will do more to maintain the confidence and strengthen the unity of the Independent operators everywhere, and to deepen and broaden the existing community of interest than could any other single occurrence, not even excepting the opening of New York City.

More than that, its effect will be felt almost immediately by the Independent manufacturers, who will be called upon to supply equipment, material and supplies to meet the rapidly increasing demand for extension and amplification of lines which will arise as soon as the connection is actually established. Scores of companies, which have hitherto been able without difficulty to keep pace with their normal growth without the Chicago connection, will now be called upon to meet and care for a service demand far in advance of their previous experience. Thus the entire Independent field will feel the stimulus arising from the consummation of this long-looked-for connection with Chicago—a stimulus the importance of which it is impossible to estimate.

The Chicago (Bell) Telephone Co. now offers its local subscribers connection with approximately 1,100,000 stations outside the city. As against this the Chicago Independent company will, as stated, place over 2,000,000 Independent telephones in direct communication with its city subscribers. This must necessarily have the dual effect of tremendously increasing the demand for the service of the Tunnel company in Chicago, and of correspondingly increasing the demand for Independent service in the field reached by the system connecting with Chicago.

The establishment of this connection will accomplish another important thing. It will remove the chief argument hitherto advanced by the Bell agents in favor of the connection of Independent systems with the long distance lines of the Bell. That organization has now nothing to offer the Independents which they do not possess. With the single exception of extent of system in Chicago, the Independent situation is far stronger than that of the Bell. And that exception is now being removed by the Tunnel company at a rate which promises within a comparatively short time a number of Chicago business subscribers equal to or greater than that of the Bell.



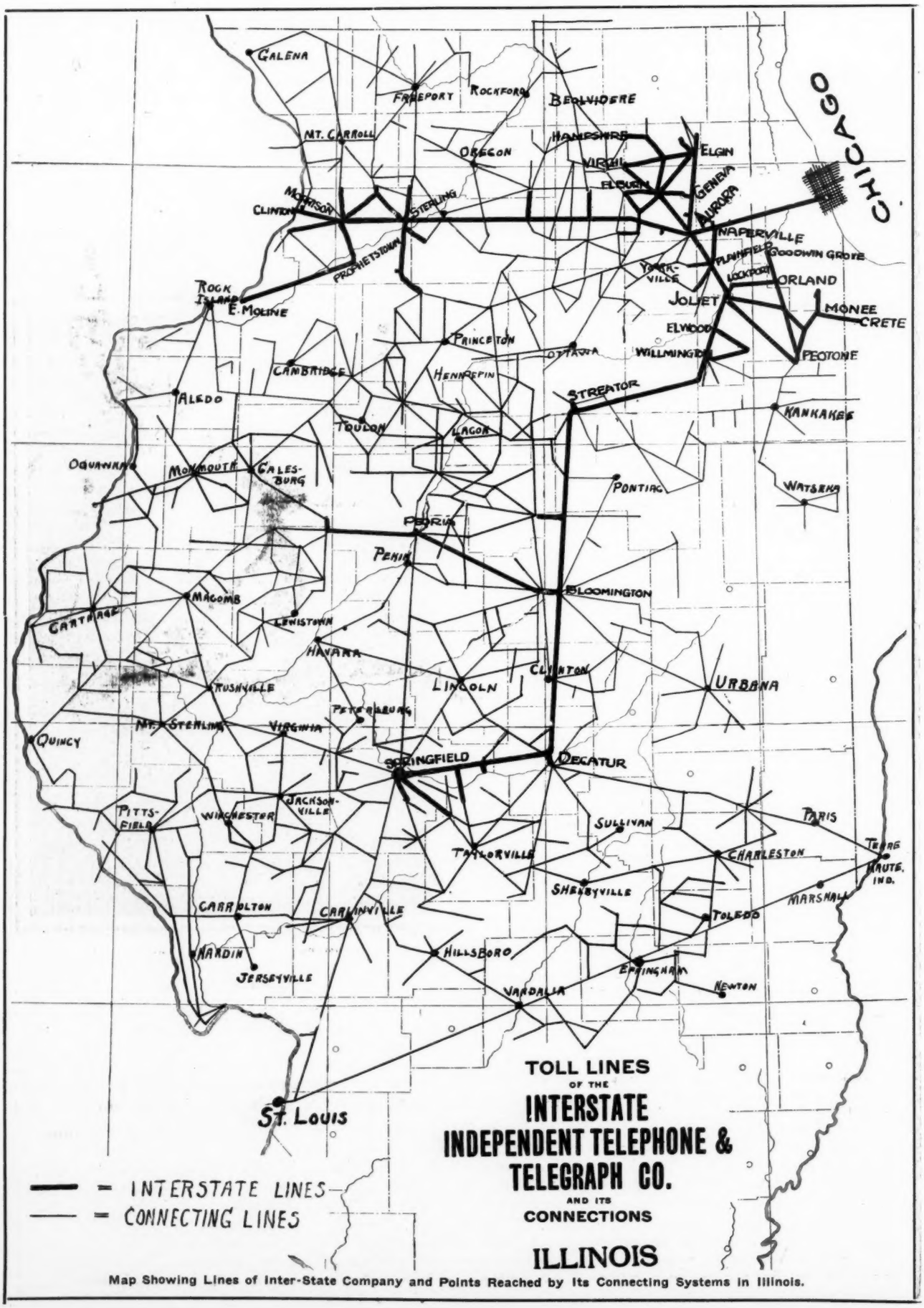
Mr. Fred A. Dolph, Receiver Inter-State Company

STATEMENT BY C. O. FRISBIE, PRESIDENT ILLINOIS TUNNEL COMPANY

Chicago is made a long distance terminal for Independent telephone lines by the contract between the Inter-State Independent Telephone Co. and the Illinois Tunnel Co.

On completion of the additional construction required for the uniting of the Tunnel company's local system and the long distance lines of the Inter-State company, the Tunnel company will be able to handle incoming and outgoing messages between Independent telephone subscribers in Chicago and those in hundreds of towns in Illinois and adjacent states.

In Chicago the Tunnel company's system now numbers about 20,000 connected telephones. By June 1 it will have more than the 20,000 required by the city ordinance, and development will be continued. The subscribers' list already includes all the stock yard's offices, the leading banks, railways, and many large business houses.



Map Showing Lines of Inter-State Company and Points Reached by Its Connecting Systems in Illinois.

The Subway Telephone Construction Co., of which Joseph Harris is president, which is now installing the automatic system in Chicago, has today about 20,000 telephones in service. The franchise provides for the operation of 20,000 stations by June 1, but the company will have nearer 24,000 instruments installed by that time. The placing of the automatic apparatus in all eight of the Tunnel company's exchanges has been completed and the entire construction for the initial installation will, as TELEPHONY has reported, be completed about May 10.

An idea of the field which will be available to Chicago over the Independent lines is graphically given by the accompanying maps. One shows the system of the Inter-State company, with its connecting lines in Illinois only. The other is reprinted from the annual report of the Kinloch Long Distance Telephone Co., of St. Louis, and shows the wide extent of the Independent systems connecting with that company and which will now center in Chicago through the Inter-State connection.

The Inter-State company has toll contracts today enabling its subscribers to reach a total of 2,240 cities and towns, which now are in telephonic touch with Chicago only over the Bell lines. Of these, 1,234 are in Illinois, 103 in Indiana, 447 in Iowa and 456 in Missouri. In Illinois, exclusive of Cook county, which is practically covered by the Chicago Telephone Co., there are 101 counties. Of these, the Inter-State and its connecting lines comprehensively cover seventy-two counties. The general scope of this network of lines in Illinois is shown both by the map and the accompanying list of counties. The Inter-State company itself operates twenty-nine exchanges in the state.

Another view of the extensive systems which will now be tributary to Chicago is given in the annual report of the Kinloch company. This showed that on December 31, 1910, that company had 23 exchanges in operation with over 37,000 stations connected, and 1,307 miles of toll lines. It reaches hundreds of cities and towns with its long distance lines, partially indicated on the small map here reproduced.

The contract between the Tunnel company and the Inter-State runs to February 20, 1929. Its absolute permanence and certainty of continuance by the present organizations or their successors is definitely fixed by the thirteenth, fourteenth and fifteenth clauses. These are as follows:

THIRTEENTH. This agreement shall remain in full force and effect from and after the date of its execution until February 20, 1929, and all the terms and provisions hereof shall extend to, be binding and obligatory upon, and inure to the benefit of, the parties hereto, their respective successors, assigns, lessees and grantees.

FOURTEENTH. It is understood that prior to, or contemporaneously with, the execution of this agreement there has been entered an order in the Circuit Court of the United States for the Northern District of Illinois, Eastern Division, in the cause therein pending, entitled "W. J. Carney, et al. v. Inter-State Independent Telephone & Telegraph Co.," authorizing the execution of this agreement by the party of the second part.

FIFTEENTH. It is agreed and understood, that prior to, or contemporaneously with, the execution of this agreement, there has been entered in the Circuit Court of the United States for the Northern District of Illinois, Eastern Division, in the cause therein pending, in which Charles G. Dawes and David R. Forgan were appointed receivers of said Illinois Tunnel Co., said cause being Consolidated Cause Nos. 29, 760 and 29,-915, authorizing the execution by said receivers on their part of this agreement; and providing further that any order or decree authorizing or directing the sale of the property which is the subject matter of said suit, shall provide that the purchasers at such sale shall take the property so sold, subject to the rights and privileges of said Inter-State Independent Telephone & Telegraph Co. and its said receivers, their successors, assigns, lessees and grantees, as defined and set forth in this agreement.

The agreement provides that the division of the tolls shall be based upon the actual investment of each company. This the court determined to be 60 per cent for the Inter-State and 40 per cent for the Illinois Tunnel Co., and this is set forth in the agreement.

It is further provided that the companies shall, within thirty days, commence to install equipment to handle 1,000 toll calls per twenty-four-hour day. The work is to be completed by November 1, 1911. The connection between the two systems is to be made at the intersection of Forty-sixth avenue and West Twenty-second street on the western edge of the city, each of the companies having agreed to extend its respective lines to that point. These lines will be of standard copper wire circuits of sufficient capacity to handle all business resulting from the interchange of service. The Tunnel company will build and operate the switching and transfer station. The plans of the receivers call for apparatus of the highest efficiency and every effort is to be made to provide first-class commercial long distance service. Neither company is allowed to arrange connections with lines which are not in first-class serviceable order.

Mr. C. O. Frisbie, President Illinois Tunnel Co.

The Inter-State company's lines now extend from Aurora to within a few miles of the city limits. The short stretch to complete the connection on the Inter-State's part will be completed by the purchase of a pole line of

the Telepost Co., the capacity of which will be increased to the required extent by additional circuits.

As possessing a peculiar significance at this time, there is reprinted with this article the compilation, based on the government's census of 1907, showing the relative strength of the Bell and Independent companies in the field within a radius of 500 miles of Chicago. This shows that there were at that time 1,135,329 Bell and 1,858,403 Independent stations within the territory named. Of the latter the Bell system claimed that 511,763 were connected with its lines, leaving 1,346,640 stations absolutely Independent, a number substantially above the number owned by the Bell.

The significance of the table at this time lies in the fact that a large number of those companies connected with the Bell lines will now avail themselves of the Independent connection with Chicago and will not renew their Bell toll contracts when they expire. This is inevitable, as in most instances the Chicago connection was the main argument for the making of interconnection contracts between those Independently owned companies and the Bell.

TELEPHONY has received a number of letters from the field indicating the deep interest inspired by the entrance of the Independent long distance lines into Chicago and the conviction that it means a great and permanent stimulation of the industry outside. Among others L. A. Herrick, secretary and general manager of the Stephenson County Telephone Co., Freeport, Ill., writes:

"The practical certainty of the early completion of long distance telephone connection between the Independent telephone exchanges of the state with that of the new automatic system of the Chicago Tunnel Co. should give not only the new Chicago system but all of the Independent exchanges of the state and their toll line systems tremendous incentives for the further perfection and extension of their business.

"The Independents have waited long and patiently for the completion of this important link, so long in fact that possibly many have almost given up hope of having such a connection.

"Now that the connection is so near and a certainty, the fact should be the cause of great toll line activities, especially in the northern part of the state.

"However, the question arises, are all of the Independent telephone companies alive to the tremendous importance of the situation?

"One thing is certain, none of us need have any worry about public patronage. So successful have been the results to the public in local competitive telephone service generally, that I predict that the Independent long distance facilities will be swamped with business. In anticipation of such a condition, what we do build should be built well.

"A very important factor must be taken into consideration, and that is those Independent companies which, although they have connections for Bell toll line service, will throw the Independent toll lines every dollar's worth of trade they can. Let me repeat,—the success of the Chicago connection is not going to be a question of getting the business. It will be solely a question of providing facilities for handling the business.

"There is not a business in this section of the country where such trade and patronage is waiting if only it is managed for the interests of the public as well as the operator, and a little common sense and foresight used in making plans for today and tomorrow.

"With the Chicago connection and the continued extension of the Tunnel system, there is not a safer and better line of business than that in which we are engaged. I believe there has not been a brighter period in the Independent history than just at present, for the whole United

Map Showing Kinloch System and Connecting Lines Soon to be Joined to that of Chicago Independent.

States, and especially so within two hundred miles of the city of Chicago."

"This announcement, when carried into reality, will have a very important and beneficial effect on the telephone situation in Michigan," writes W. S. Vivian, secretary of the Michigan Independent Telephone & Traffic Assn.

"The entire western coast of Michigan is practically a Chicago summer resort. It is also one of the greatest fruit belts in the country, and Chicago is their natural market. There are in Michigan some 600 odd telephone organizations, of all kinds and sizes. Possibly 400 of these are identified with the Independent telephone movement and have no connections other than those they can get through Independent toll lines. The vast bulk of these will, through the summer months and especially through the fruit season, have more or less business with Chicago, and it is my opinion that as soon as connection is secured with Chicago, we are going to find ourselves greatly handicapped because of insufficient circuits, in that the volume of business that will be let loose over the Independent toll lines will not be anticipated by our companies generally."

Walter J. Uhl, secretary of the Logansport Home Telephone Co. and secretary and treasurer of the Indiana association, writes:

"I am much pleased to learn that the court has authorized the contract giving Independent telephone lines entrance to the Chicago Tunnel Co.'s Independent system. This connection will be of much importance to all Independent interests in the state of Indiana and will particularly greatly influence the growth in business of the Independent companies in this locality.

"The toll lines of the Independent companies in Indiana are in excellent condition and additional circuits can be built at comparatively small expense to take care of the large volume of business which will undoubtedly develop with the Chicago connection. There are thousands of telephones in operation in this territory which are exclusively Independent, therefore the business interests of Chicago will derive great benefit from the territory in this vicinity.

"This information is particularly pleasing at this time on account of our forthcoming state convention, to be held May 10 and 11, when we can announce to all Independent interests in this state the realization that the battle of the Independents for entrance in Chicago has finally been successful."

"It is indeed very gratifying to find that at last contracts have been signed enabling the Independents to reach Chicago," says R. G. Roadstrum, manager of the Galesburg (Ill.) Union Telephone Co. "This company has been hoping for such a connection for some time, although we have built our business without any long distance points outside a radius of approximately fifty miles.

"One of the great advantages that this connection will have is the fact that to a certain extent it will stop the need of surrounding towns in the rural districts or large cities of connecting with the Bell long distance lines. We do not believe that the main object of the Bell company in giving such a connection is to favor the suburban subscribers in other towns by giving them long distance service, but we do believe that they hold this in the foreground while the principal object is to have a terminating station where they can terminate all their long distance calls, thereby putting themselves on an equal basis with the Independents in large centers where strong competition exists.

"With this connection established we feel that we can go to all of our connecting companies and show them wherein it will be to their disadvantage to make further connections with any companies except the Independent. In Galesburg we have nearly six times as many telephones as any other company and we have assurance that the small number holding other telephones are doing so only until Chicago and other long distance points are reached."

W. L. Moellering, secretary of the Home Telephone & Telegraph Co., Ft. Wayne, Ind., surveys the situation as follows:

"The importance to the Independent telephone interests, as well as to the public in general, of the order issued by Judge C. C. Kohlsaat of the United States Circuit Court, ratifying a traffic agreement between the Illinois Tunnel Co. of Chicago and the Inter-State company, is of decided magnitude.

"The state of Indiana, with its two hundred and fifty thousand Independent telephones, is sure to develop a large amount of Chicago toll line traffic which has not existed heretofore. Independent telephone securities will have an added value. Chicago business men are also sure to profit in securing increased business which will come to them over the Independent toll lines. If Independent telephone companies have been able to make the successful growth which they have in spite of their inability to reach Chicago and a few of the other large cities, it is

ILLINOIS CITIES REACHED BY INTER-STATE

County.	Cities reached.	County.	Cities reached.
Adams	12	Lee	20
Bond	7	Livingston	22
Boone	11	Logan	19
Bureau	30	McDonough	7
Calhoun	5	McHenry	2
Carroll	12	McLean	49
Cass	4	Macon	26
Champlain	21	Macoupin	31
Christian	22	Madison	31
Clark	16	Marshall	16
Clinton	5	Mason	16
Coles	10	Menard	10
Cook	7	Mercer	6
Crawford	11	Montgomery	14
Cumberland	14	Morgan	20
DeKalb	28	Moultrie	19
Dewitt	19	Ogle	33
Douglas	7	Peoria	19
Dupage	4	Piatt	14
Effingham	12	Pike	33
Fayette	12	Putnam	6
Ford	2	Randolph	9
Fulton	32	Rock Island	18
Greene	19	Sangamon	48
Hancock	16	Schuyler	6
Henderson	4	Scott	10
Henry	15	Shelby	14
Iroquois	17	St. Clair	23
Jasper	14	Starke	13
Jersey	10	Stephenson	23
Jo Daviess	7	Tazewell	22
Kane	29	Warren	7
Kankakee	26	Whiteside	25
Knox	16	Will	32
Kendall	12	Winnebago	11
La Salle	43	Woodford	18
			1,234

reasonable to take it for granted that with Chicago connection their future growth will be enhanced.

"Here and there Independent companies have taken over the Bell toll lines into their board largely because they desired to get Chicago connection, but the great percentage of Independent companies have kept free from any entanglement with their competitors.

"In Fort Wayne, 150 miles from Chicago, we have 6,500 telephones as compared with 300 Bell telephones. In some of our neighboring towns in this part of northern Indiana, such as Columbia City, LaGrange, Angola, Decatur, Monroeville, Warsaw and a number of others, there are *only* Independent telephones. These companies are owned by local people who are loyal to the Independent cause—they appreciate the hard fight which they had to make in the early history of their business.

"My opinion is that with Chicago open to the Independents a new but aggressively active Independent campaign will result throughout this entire section; in fact, in every other territory that looks to the Chicago market for supplies.

"The opening of Chicago to the Independents will develop the building of new toll circuits on a large scale and should encourage the formation of a company with capital sufficient for the building of east-to-west ample trunk line facilities."

This announcement is the climax of a series of events which have been engaging the attention of Independent telephone men at intervals for several years past. It is generally understood that the Chicago business men were interested anew in the development of an Independent telephone system in their city by publicity given to the response made by Mr. H. D. Critchfield to the address of the mayor's representative at the convention of the National Independent Telephone Association three years ago. The long fight made in the City Council subsequent to this time, when many Independent telephone men representing systems outside of Chicago presented statistics, and Mr. Critchfield argued the case at length with representatives of the Chicago Telephone Co. before a committee of the council, is also familiar history. At this time it was shown conclusively that the Independent stations in a position to talk with Chicago as soon as such a connection could be made greatly outnumbered the Bell stations, and that the only way for Chicago to reach these stations was to have Independent toll lines, as most of the business men in the outside towns use the Independent telephone service exclusively.

From that time on the courage and hope of the Independents outside of Chicago were revived, and many have confidently believed that it was only a matter of time until the Tunnel company would be in a position to grant the desired connection. Their faith has been amply justified by the progress of events leading up to the signing of the contract, and its authorization by the court last week.

Keystone Report for March and Nine Months.

The Keystone (Independent) Telephone Co., of Philadelphia, has issued its report showing earnings and expenses for the month of March and nine months ended March 31. The figures are as follows:

REVENUE ACCOUNT.

	1911	1910
Month of March.		
Gross earnings	$95,862	$95.101
Operating expenses and taxes	47,822	47,490
Net earnings	48,040	47,611
Less interest charges	24,351	25,061
Net surplus	23,689	22,550
Nine months ended March 31.		
Gross earnings	$858,917	$835,662
Operating expenses and taxes	427,899	420,828
Net earnings	431,018	414,834
Less interest charges	220,124	228,264
Net surplus	210,894	186,570

TELEPHONES WITHIN 500 MILE RADIUS OF CHICAGO

Per Government Report—Census 1907.

States Entire:	Bell.	Independent.	Of which Bell claim connection with	Exclusively Independent.
*Illinois	133,263	285,322	109,101	176,221
Michigan	103,793	106,049	30,933	75,116
Indiana	72,462	216,990	50,065	166,825
Ohio	183,358	312,278	29,284	283,994
Kentucky	42,200	51,796	9,039	42,757
Missouri	91,704	220,823	82,393	138,430
Tennessee	45,372	25,758	9,241	16,517
Iowa	52,772	279,773	74,806	204,967
West Virginia	15,535	46,609	15,535	31,074
Wisconsin	69,870	89,005	36,366	52,639
Total	810,329	1,634,403	446,763	1,187,640
Fractional:				
Minnesota	50,000	90,000	35,000	55,000
Nebraska	25,000	30,000	5,000	25,000
Kansas	20,000	40,000	15,000	25,000
Pennsylvania	50,000	40,000	6,000	34,000
New York	40,000	24,000	4,000	20,000
Total	995,329	1,858,403	511,763	1,346,640
*Without Chicago	140,000			
Total	1,135,329			

Things Not Clearly Understood

Bell Depreciation—Comparison of General and Western Electric—Connecting Lines

By J. C. Kelsey

"How did papa get so much money, mamma?" Asks the future plutocrat.

"God gave it to him, dearie."

"Why did God give it to him, mamma?"

"Oh, because—because God thought he ought to have it."

"And what had other people done to make God so angry that he took the money away from them, mamma?"

"Run on to bed, dearie—*when you grow older, you will understand those things.*"

Life gives us this interesting dialogue—

And the question came to my mind—*Will* we understand when we grow older?

The inspired Mr. Vail made a very passionate plea for state control—to be regulated and accordingly protected by the various states.

Yet, right in Minnesota, the Bell lobby actually killed the State Control Bill.

Does the Northwestern Bell company pretend to be loyal?

Or is there sedition and rebellion in Mr. Vail's chain of so-called "interdependent" companies?

Why does the Bell preach for state control while at the same time its licensee companies vigorously resist its enactment?

Do you really suppose that licensee companies have a mind of their own, and are disobeying mother?

We learn that the sixty-eight page Bell report was really clever.

One of the ablest judges of a generation (name not given), gave out an interview that Vail's report was great—because it was not written by a lawyer.

An excellent reason.

God only knows how many really good business enterprises are ruined by lawyers!

This eminent judge said it was the ablest economic explanation and defense of the modern policy of combination he had ever read.

There is no wonder that judges and courts are in contempt!

And it is a wonder why lawyers escape criticism. You can't bribe a lawyer—you can only retain him.

You can retain a lawyer to ruin his best friend.

And such a code which allows one man to betray another legally is in need of amendment.

If the Vanderbilts had exclusive bathing privileges in your city reservoir, you could find some eminent judge to justify the divine right of it.

But when we grow old, we may understand these things!

Another thing hard to understand is the relative performance of practically two identical companies—the General Electric Co. and the Western Electric Co.

Note the close affiliations of the directors of the two companies. The following is a partial list:

J. P. MORGAN
- Director Western Union Telegraph Co.
- Director General Electric Co.

CHARLES STEELE (Member firm J. P. Morgan & Co.)
- Director General Electric Co.

THEODORE N. VAIL
- President and Director American Tel. & Tel Co.
- Pres., Director and Ex. Com. West Union Tel. Co.
- Director Western Electric Co.

E. J. HALL
- Vice-Pres. American Tel. & Tel. Co.
- Director Western Electric Co.
- Executive Com. and Director Western Union Tel. Co.

H. B. THAYER
- Vice-Pres. American Tel. & Tel. Co.
- Pres. and Director Western Electric Co.
- Director Western Union Telegraph Co.

E. E. SUNNY
- Vice-Pres. American Tel. & Tel. Co.
- Director Western Electric Co.
- Director General Electric Co.

S. L. SCHOONMAKER
- Director American Tel. & Tel. Co.
- Director General Electric Co.
- Director Western Electric Co.

JOHN I. WATERBURY
- Director American Tel. & Tel. Co.
- Director Western Union Telegraph Co.
- Director Western Electric Co.

HENRY S. HOUSE
- Director American Tel. & Tel. Co.
- Director Western Union Telegraph Co.
- Director Western Electric Co.

H. L. HIGGINSON
- Director American Tel. & Tel. Co.
- Director General Electric Co.

T. JEFFERSON COOLIDGE, JR.
- Director American Tel. & Tel. Co.
- Director General Electric Co.

C. G. DUBOIS
- Comp. American Tel. & Tel. Co.
- Director Western Electric Co.

OLIVER AMES
- Director Western Union Tel. Co.
- Director General Electric Co.

Both are interwoven in some mysterious way.

Following is the relative showing of the two companies in figures and percentages:

		General Electric.	%	Western Electric.	%
1.	Income	$74,707,688	108	$68,861,455	100
2.	Cost	58,473,426	100	63,442,286	108
3.	Gross profit	$16,234,262	320	$ 5,419,169	100
4.	Percentage of gross profit		21		8
5.	Depreciation	$ 4,661,175	405	$ 1,150,000	100
6.	Net profit	$11,573,087		$ 4,269,169	
7.	Percentage of net profit		15		6
8.	Bond interest	717,395	100	884,893	123
		$10,855,692		$ 3,384,266	
9.	Dividends	5,214,368	307	1,700,000	100
10.	Surplus	$ 5,641,324	340	$ 1,684,266	100

Surely these two concerns do business on large scales.
But let us compare them.
Why?
Because the General Electric Co. is a trust, as it were, selling directly to the public.
And the Western Electric Co. is a trust selling to a trust and being controlled by that trust.

Mr. Vail says "that the Western Electric Co. occupies a unique position in the manufacturing business."
"To control the quality and style of apparatus . . . it was necessary for the Bell system to control the manufacture."
"There was no selling expense."
"Prices charged to the Bell system are lower than the prices charged to other telephone customers."

Now mark the following:
"The relation between the Bell System and the Western Electric Co. has the advantage of a ready made business, with none of the . . . expenses and risks that other manufacturing companies have."

Yet the
General Electric sold $74,707,688
Western Electric sold $68,861,455
General Electric exceeded Western Electric as 108 to 100.

Can we use that short and ugly word here?

With no risks and expenses such as the General Electric Co. has, it cost the
General Electric $58,473,426, and
Western Electric $63,442,286.
The Western Electric cost exceeded the General Electric as 108 to 100.

A reversal of form.
And an excellent proof of the whole truth of the sixty-eight page report.
Has Mr. Vail ever read the story of the cherry tree?

Item 3 shows the gross profits of the General Electric at 21 per cent and the Western Electric with all the veiled advantages at 8 per cent:

General Electric Co.	$16,234,262—21%
Western Electric Co.	5,419,169— 8%

One has competition. The other has none, or claims to have none.

Nothing but a magnificent advantage which no other manufacturing company would have—at least, minority stockholders would not.

Bell depreciation was ever a jest, and usually only enforced where minority stockholders would pay for it!
But getting down to depreciation:
The General Electric Co. had $4,661,175;
The Western Electric Co. had $1,150,000.

Which is right?

Is General Electric trying to hide its earnings—
Or is Western Electric neglecting it so it can pay those magnificent dividends?

Compare them, please:

General Electric Co.	$5,214,368
Western Electric Co.	1,700,000

Is it an advantage to be tied to the Bell widow?
I doubt it!

Both companies handle practically the same amount of goods.
One has great selling expense.
The other has none!
One earns $11,573,000 net.
And the monopoly-cursed one earns but $4,269,000.

Surely, it should make one sit up and take notice!
With advantages no one else has, this company earns one-third of what it should.
Why?
Does the Bell get goods too cheap?
Does the Western Electric Co. look extravagant?
Are branch houses for the benefit of the Bell, or for the Western Electric?

Mr. Vail says, lovingly, that "everything indicates that the company can make satisfactory prices . . . and maintain a 10 per cent dividend."

Satisfactory prices!
A 10 per cent dividend!
That sounds good to the banker.
But no one expects a banker to look any further than his nose into any alleged respectable institution.

But it sounds doleful to the minority stockholder.
He knows what a conservative Bell policy means.
It means ruin and disappointment to any investor in its stocks!

It is hard to understand.
Two companies alike.
Selling identical material.
One to the public—one to a trust!
One controlled by no one—the other by the Bell.

One is a competing concern, the other a monopoly!
One makes $16,234,262 and the other $5,419,169.
"Run on to bed, dearie—when you grow older, you will understand."

And then there is our old friend, Depreciation.

"The telephone business is *unique* (note that chestnut) in that it supplies its own terminals . . . temporary in character and calls for large investment, *unique*" (again) because of a "deteriorating character."
"The entire disregard or underestimating of depreciation . . . is the cause of nearly all the financial disasters . . . and has been the common failing of newcomers in the telephone field."

There you are, Mr. Newcomer.
What right did you have to enter the telephone business at all?

What a rude shot!
How nasty of the chief to slur his 1,852,000 connected stations!
"Ignorantly or wilfully . . . the Bell . . . was given the responsibility, had to carry the burden, and assume the work of reconstruction."

Ignorantly? I guess not!
The Bell gang always controlled the licensee plants, boots and all.

If they are not to blame for the ruin of the licensee minority stockholder, who is?

And the clever illustration!
A "carter," a "local expressman," or a "hackman!"

Why not that depreciation gag about the suit of clothes?
Verily, I believe that cold Boston intellect is weakening.

Let us look at the Missouri & Kansas Telephone Co.
It has 125,760 stations.
And connects with 251,836.
Think of it, Mr. Reader!
The Bell pretends to control the situation, when a weak company with 125,000 stations is surrounded and interwoven with 251,836 Independent or "newcomer" stations!

Here is another point.
Those 125,000 Bell stations cost $162 each, or $20,000,000.
Two hundred fifty one thousand more stations, if they had been installed at all—for we doubt it, if Bell had a monopoly and did not have to meet competition—would represent $40,000,000 more.

The Bell has failed to make a return to the stockholders on $20,000,000.
Is it not a great thing that the country around Kansas City is spared the loss of a dividend return on $40,000,000 more?

You and I know that if it had not been for competition, there would not be 50,000 telephones in a district where there are now 500,000—10 for 1.

Getting back to depreciation—the Bountiful Bell depreciator spent $468,788 for 125,760 stations, or $3.75 per station year.

Does that figure of $3.75 look somewhat natural?
Because it is near $4.00, the Keystone figure.
And it is lower too, than the $5.00 reserve figure of Kinloch and Tri-State.

There never was a doctrine so wilfully lied about as Bell depreciation.
And also Bell maintenance.

The maintenance account of the "rapidly deteriorating" telephone terminal of the Missouri & Kansas Bell for 1910 was $640,755 or $5.12 per station.
Very few Independent properties spend as little as that on maintenance.

And combining all accounts of the Missouri & Kansas Bell, we have:

Maintenance	$640,755
Depreciation	468,788
Reserve	144,632
Total	$1,254,175

Or $10 per station.

It seems to me that the Bell management should start out on another excuse for the outrageous cost of operating their telephones.
Any Independent telephone company can survive indefinitely, pay dividends regularly, on a gross income equal to what it costs the Bell system to operate.

The public may be deciding on the telephone question, but it will not choose the extravagant side of a so-called evil, when it already recognizes the economical side.

There are only 425 localities where there is competition.
In Iowa, alone, there are 3,000 companies.
The Bell management is fighting wind mills as usual.

Getting back to earnings of Bell properties, the Missouri & Kansas Bell earned $27 per telephone last year.

One redeeming economy that possibly was overlooked by the tax board was taxes.
Now the average tax is $2 per telephone.
Missouri & Kansas got off with $107,654 or eighty cents.

Had this philanthropic Bell company paid its average tax, the account would exactly wipe out its reserve account.

Can a tax dodger be a good citizen?

Can a Bell company, getting the benefits of 250,000 terminal stations besides its own, survive on an income of $27 per station?

That won't bother the present management, because it is looking into the broader side of it—serving the public!

Who believes it?
That sixty-eight page Bell report may please an ex-member of the Supreme Court, and it may be a great defense of a spoils system, but it is full of jests and jokers—and it lacks conviction!

It reminds you of one walking on thin ice.

The Bell is not accustomed to making reports—nor has it used a typewriter until lately—nor does it seem to know that the material side of its interests needs all the attention that can be given it. It is hard to understand—but

---

MORAL—"Run on to bed, dearie—when you grow older, you will understand."

Change in Board of Tri-State Independent.

A meeting of the directors of the Tri-State (Independent) Telephone & Telegraph Co. of Minneapolis was held this week in Chicago. The resignation of F. C. Nelson as secretary and director was accepted, James H. Lockhart of Pittsburg succeeding him on the board, and H. L. Mason, Jr., being elected secretary. The board as at present constituted includes E. H. Moulton, president; J. H. Lockhart, J. M. Lockhart, H. L. Mason, Jr., secretary, and G. W. Robinson, treasurer.

Montana Independent Report for February.

The Montana Independent Telephone Co., Butte, Mont., has issued its statement of earnings and expenses for the month of February.

The company's gross revenue was $19,792.77, while its gross expenses were $7,967.48. For that month, though it was a short one, the company's net profits were $11,212.76. This net profit is twice the amount of bond interest accruing during the same month.

Would Oust Bell From Frankfort, Kentucky.

A mass meeting of citizens of Frankfort, Ky., was recently held to present a petition to the City Council asking that the East Tennessee (Bell) Telephone Co. be refused a franchise to operate and that the concern be ousted from the city.

"LEST WE FORGET!"

As soon as this decision came down (Supreme Court decision, of 1887, sustaining the Bell patents), the Bell people proceeded to stamp the life out of these competitors. In a dozen states injunctions were secured and infringement damages promptly assessed. Under these judgments, telephone plant after telephone plant was ripped out, and the apparatus was piled up in the most conspicuous place that could be found and burned in a public bonfire as an "object lesson." In St. Louis and the surrounding country, the Pan-Electric company and other concerns had a number of active exchanges in operation. The equipment of these exchanges was piled upon the levee as high as a house, and then the torch was applied.—*FIGHT WITH AN OCTOPUS.*

Bell Relinquishes Attempt to Secure Rochester Plant

Formal Withdrawal of Proposition is Made by Stevens, President of Friendship Bell Company, which Later Announces Purchase of Majority of Stocks of Syracuse and Utica Corporations—Federal Concluding Arrangements to More Firmly Bind Northern New York Independents

Failing in its effort to secure the full quota of stock and bonds of the various Independent telephone companies in the Rochester, N. Y., group, H. F. Stevens, president of the Friendship (Bell) Telephone Co., through which the deal was to be made, formally withdrew the offer. Immediately after this was done, however, the announcement was made that the Bell has secured a "substantial majority" of the stocks of the Onondaga company, of Syracuse, the Utica Home and the Rochester, Syracuse & Utica company, the latter being a holding company.

The final analysis of the situation, therefore, appears to show the Bell in control of the situation at Syracuse and Utica only. The attempt to secure the Rochester company has been abanadoned, and probably will not be again renewed.

The action taken by the Federal Telephone & Telegraph Co., of Buffalo, seeking a permanent injunction against the Bell companies, their officials and others concerned in the deal, is still standing. Should the Bell interests fail to oppose it, the permanent injunction will issue, forever preventing a sale to the Bell, unless the action be withdrawn by the complainant company. No official statement as to the final disposition of the suit has been made.

It is stated that the Federal interests are still buying Rochester Telephone Co. stock, and it is held in some quarters that, in all probability, sufficient stock has been purchased to give the Buffalo company control. B. G. Hubbell, president of the Federal company, stated some time ago that his corporation then owned over 35 per cent of the Rochester stock, of which a total of 4,894 shares is outstanding. Comparatively little of the balance would be necessary to bring the Federal holdings up to 51 per cent., and it is believed that this has been secured. If it has, a formal statement to that effect will undoubtedly soon issue.

At all events, Rochester, the vital link in the Independent systems in that portion of New York state, is still Independent, with hardly a chance that it will ever again be the objective in a Bell campaign for the domination of the field. George R. Fuller, president of the company, has been asked by TELEPHONY for a statement as to the future conduct of the business, but has not yet given out anything for publication.

The outcome of the deal in Rochester is regarded as affording conclusive evidence that not only is a majority of the telephone using public in favor of maintaining competitive systems, but that a majority of the stockholders of the Rochester company is also in favor of competitive operation. The failure to deposit sufficient stock and bonds of the Rochester company is also regarded as evidencing a conviction on the part of the holders that their investment is entirely satisfactory. While no exact figures have been given out as to the amounts of Rochester stock and bonds deposited with the Fidelity Trust Co., it is said in well-informed circles that they were far under the minimum limit set by the Bell.

In further pursuance of an effort to unify and cement more closely the Independent concerns in New York state which are in its field, the Federal company has gone before the Public Service Commission with various requests for permission to perform acts looking to that end. Edward H. Letchworth, of Buffalo, Deputy Attorney General, and Howard Hendrickson, of Albany, represented the Federal company.

Authority was asked to issue bonds to the amount of $653,800 and stock of the par value of $174,250, with the proceeds of which it proposes to take over outstanding securities of Independent telephone companies in Niagara Falls, Lockport, Tonawanda, Medina, Dunkirk, Batavia, and the company now serving localities in Wyoming county.

It also proposes to acquire pole lines running from Erie, Pa., to Canandaigua, and lines through the western section of New York state, connecting those points.

For the purchase of $456,000 of bonds of the Niagara County Home Telephone Co. the Federal company intends to pay $364,800 at the rate of 80 cents on the dollar. It already has a contract for the purchase of $275,000 bonds of the Niagara company. It also desires to purchase $129,250 par value in stock of the Niagara company and already has a contract for the purchase of $80,000 par value of this stock.

In Batavia it proposes to purchase $50,000 of bonds of the Batavia Home Telephone Co., exchanging its own bonds therefor, par for par. It now has a contract for the purchase of $15,000 of these bonds. It also wishes to purchase $30,000 capital stock of the Batavia company, and pay therefor $15,000 of its own stock at par. The Federal company already has a contract for the purchase of this stock on these terms.

It will also purchase $30,000 par value of the stock of the Wyoming County Home Telephone Co., paying therefor an equal amount of its own stock; also $20,000 in bonds of the Wyoming company on the same basis.

It will acquire $64,000 of the bonds of the Dunkirk Home Telephone Co., paying therefor its own bonds in an equal amount. It now has a contract for the purchase of $39,000 of stock at these terms.

The company also desires to purchase all of the telephone poles, cables, rights of way and other property now owned by the Independent Union Telephone Co., of Albany, situated west of the city of Syracuse, including all property and rights in the state of Pennsylvania for the sum of $150,000, exchanging therefor its own bonds at par. It now holds a contract for the purchase of this property at these terms.

The Federal company has also applied to the commission for permission to transfer to it franchises held by the Warner Telephone Co., of Gowanda; the Penn Yan Telephone Co.; the Wayland Independent Telephone Co.; the Clifton Springs Telephone Co.; the Livingston County Telephone Co., operating at Avon, Caledonia, Dansville, Geneseo, Honeoye Falls, Lima and Livonia; and the Salamanca Telephone & Telegraph Co. The Federal company now owns all the capital stock of these companies and wishes to take over the franchises and merge each with the Federal company.

It is stated that the applications before the commission are made for the purpose of increasing the effectiveness of the Independent telephone business up-state, bringing the properties into closer relationship and effecting economies in operation.

The commission reserved decision on the various applications. It is stated that the Federal company has contracts

which will insure the transfer of all the securities provided the commission approves the application. Officers and employes of the company testified as to the value and condition of all the properties.

Minnesota Independents Fail to Secure Utilities Measure but Reach Important Understanding.

The Independent telephone companies of Minnesota found a common ground in their recent attempt to secure legislation providing for the placing of telephone companies under the supervision of the state Tax Commission. The measure also provided for compulsory physical connection of competing lines.

The House passed it by a vote of eighty-one for and twenty-eight against. In the Senate, the bill was held in committee until almost the eleventh hour. The Northwestern Bell was openly and strongly against the measure. The Independents were certain of a majority on the bill if it could have been brought to a vote in the regular course of business. This, however, the committee blocked successfully.

The only step remaining, during the closing hours of the session, was to move to suspend the rules and place the bill on special orders. This was accomplished with a confortable margin over the necessary votes. It was a dangerous proceeding, however, inasmuch as placing it on special orders required that a 'two-thirds vote be obtained for its passage. And here it failed by only three votes.

In spite of the defeat, however, the fight to secure this legislation has, as stated, given the Independents a common ground, and has probably done more to bring them solidly together than anything else in the history of the industry in that state. The Bell officials and henchmen were exceedingly overbearing and offensive in their partisanship and succeeded in antagonizing a considerable number of companies with which the Northwestern Bell now connects.

As a result, officers of several of these have declared that they will sever their connections with the Northwestern Bell at the expiration of existing contracts, and will connect the trunk lines of the Tri-State Independent to their boards. The attitude and fair disposition of the Tri-State officials has been made prominent by comparison and that concern has gained a standing even among the timid in the smaller concerns, which have hitherto been suspicious of the "big fellow." From this understanding which has been reached will undoubtedly grow a united Independent body in Minnesota which will accomplish far more than any previous association has been able to do. The utilities measure will be brought up at the next session with every assurance of passage.

New Ohio Company Increases Stock.

When the People's Telephone Co. of Geneva, Ohio, was started a few weeks ago the preliminary capitalization of the company was placed at $10,000. It was known that this would not be sufficient to install the grade of equipment necessary for a first-class up-to-date telephone system for Geneva and adjacent territory. So after carefully going over the situation the directors determined to increase the capital stock to $25,000. The $10,000 capital has been fully subscribed and, judging by the rapidity with which it was taken up, as well as the fact that there are more than a hundred stockholders, it is plain that there will be no difficulty in placing the additional stock.

T. N. Vail a New Haven Director.

Theodore N. Vail, president of the American Telephone & Telegraph Co., has been elected a director of the New Haven Railroad, succeeding Nathaniel Thayer, deceased.

Secretary of Department of Commerce and Labor Urges Passage of Federal Incorporation Law.

In an address delivered before the members of the Champaign, Ill., Chamber of Commerce recently, Secretary Nagel, of the Department of Commerce and Labor, made a strong plea for a national corporation law to supersede the present licensing of great corporations by states. He declared that the federal government, having the power to punish, should also have the power to protect the commercial interests of the country; that the licensing of corporations by forty-eight states and the attendant complications was ridiculous in this era of advancement. Secretary Nagel spoke, in part, as follows:

> The states lost their rights in national commerce long ago. There is need of a new code. Commerce is a national proposition. There is too much uncertain law, too much conflicting jurisdiction. What is legal in one state is illegal in another.
>
> There is too much agitation. We should check our demand for new things until we simplify things as they are. We should not complain and demand new departures until we understand better what the government is doing today.
>
> For fifteen years there has been uncertainty. The rules of the game had to be established. Business waited. Now the business interests of the country have a right to demand protection from the same power that punishes them for breaking the rules.
>
> We must take a survey of the situation. We must have the powers of the national government defined. We must have the powers of the states settled. They have spent much time in quarreling so far. But the federal government has been obliged to do many things. It is practically doing now what it hesitates to claim the right to.

As an instance, the Secretary stated that, in his department, the bureau of standards fixes most important weights and measures. But it has no power to enforce these in the states. He declared that there must be co-operation between federal government and the states. If the states don't step in, the government must.

Springfield & Carlisle Company Sold.

Announcement of the purchase of the Springfield & New Carlisle Telephone Co. by the Springfield & Xenia Telephone Co. has been made. The New Carlisle company is a Bell corporation and it is understood that the deal, all the details of which have been completed, is contingent upon the legalizing of the mergers of competing telephones. Under the plan the Independent company will handle all the local business, while the Central Union and the American Telephone & Telegraph Co. will handle the long-distance business.

Tennessee Legislature Kills Physical Connection

In Tennessee a pending bill provides for the creation of a Public Utilities Commission, to consist of three members, whose duties shall include supervision of telephone companies. The bill provides power to regulate rates; to supervise the issue of bonds and stocks; to compel adequate service. Failure to carry out rulings will be penalized by a fine of $100 a day.

The lower house has killed a bill providing for physical connection for long-distance service.

Morgan Companies' Annual Meetings Again Postponed.

The annual meetings of stockholders of the Cuyahoga Telephone Co. and the United States Telephone Co., which were to have been held on Monday, have been postponed until May 29 and May 22, respectively.

Kinloch Company Declares Regular Dividend.

The Kinloch Long Distance (Independent) Telephone Co. of St. Louis has its regular quarterly dividend of 1½ per cent payable May 15 to stockholders of record May 5.

Physical Connection Bill Becomes Law in Michigan

Giles Bill, Signed by the Governor, Legalizes Merger, Lease or Consolidation of Competing Companies When Approved by Railroad Commission—Gives that Body Power to Enforce Physical Connection, as Well as General Supervision Over Telephone Companies

A measure legalizing the merger or lease of telephone corporations and providing for compulsory physical connection was passed by the Michigan legislature and received the governor's signature last Saturday. The state Grange introduced the measure which was known as the Giles bill. This measure originally provided that, after it became law, telephone companies operating in competition should provide trunking connections between their respective exchanges. It was estimated that this would entail an investment of from $750,000 to $1,000,000 upon the Michigan Bell and an equal amount upon the Independents. The bill was amended, therefore, so that physical connection shall only ensue after an application has been made to the State Railroad Commission by the people of a given locality for such connection. It is provided that the commission shall order a hearing, and only upon its ruling that the public convenience and necessity demand the connection shall it become obligatory upon the telephone corporations to accomplish it.

A further amendment was made to the law as originally drafted making mergers, leases and consolidations lawful, after they have been approved by the commission. The law also provides that no telephone franchise shall be granted until the promoters of the enterprise have received a certificate of public necessity from the railroad commission.

Apart from the agriculturist sentiment in favor of the measure, the passage of the bill was advocated, among others, by John A. Russell, assistant to the president of the Home Telephone Co. of Detroit. Some objection was made to the bill by representatives of various Independent companies, but these were overruled.

The bill declares all telephone lines and exchanges to be common carriers, and states that all laws, so far as applicable, now in force relating to and regulating common carriers shall apply to telephone companies. All companies are required to furnish "reasonably adequate service and facilities," all charges must be "reasonable and just," and the commission is given power to "make, alter, amend or abolish any rate or charge for any service." Unjust discrimination in the matter of rates or service is prohibited.

Section 6 is, in part, as follows: "Whenever application shall be made to the Michigan Railroad Commission by any party in interest to order the physical connection of any local telephone exchange, operated by any person, co-partnership or corporation, with the local telephone exchange operated by any other person, co-partnership or corporation in the same city or village, the said commission shall give due notice to the respective persons . . . owning or operating such telephone exchanges of a hearing to be had upon such application, and such hearing shall be conducted in the manner herein prescribed," etc. After such hearing the commission shall determine "whether or not such physical connection is required by the public necessity or convenience." "If said commission shall decide that such connection is so required, the telephone companies affected by such order shall furnish and maintain all reasonable and proper facilities for the interchange of service between their respective exchanges affected by such order."

The section further provides that every company affected by such an order is required to perform switching service for the connecting line, receiving therefor the sum of five cents in addition to the regular service charge, if any, which fee may be collected from the subscribers. This section also provides for toll service under these conditions, the division of the fee being left to the commission.

Merger, consolidation and lease of competing companies are declared lawful in Section 6 in these words: "Provided that the provisions of this section in regard to switching charges shall not apply when two or more competing companies in any locality shall merge or consolidate their property and business in such locality under the direction of the said Railroad Commission of this state, or when one competing company shall sell or lease its plant, property and business to another company in the same locality, such merger, consolidation, sale or lease, if with the approval of the said Railroad Commission, being hereby declared lawful.

Section 7 provides for the obtaining of a certificate of public necessity and convenience before the granting of a telephone franchise. Succeeding sections give the commission power to hear complaints regarding rates or service, require it to give the telephone company affected thirty days' notice of the hearing, and permit it to take testimony under oath, compelling the attendance of witnesses and the production of books of record, etc. Appeal from the findings of the commission may be made to the Circuit Court in Chancery, and no injunction or stay shall be of effect unless issued by that court. Sixty days after the determination of a suit in the Circuit Court, an appeal may be taken to the Supreme Court.

Telephone companies are required annually to furnish under oath, upon blanks furnished by the commission, statements of earnings, balance sheets, etc. The commission shall prescribe the form of bookkeeping to be employed. Rate schedules must be publicly exhibited and must also be filed with the commission. Penalties for violation of the provisions of the act are fixed at from $50 to $1,000 for a first offense, and from $100 to $2,000 for subsequent offenses.

Cumberland Ordered to Procure a Franchise.

The city attorney of Mt. Vernon, Ind., acting upon the orders of the council, has notified the Cumberland (Bell) Telephone & Telegraph Co. that it is operating in this city without a franchise. The Cumberland franchise expired several years ago but the company continued to operate under an American Bell franchise which was obtained ten years ago. The case was taken to court and Judge Welborn decided in favor of the city. Later an appeal was taken and the Indiana supreme court upheld the decision of the circuit court. The company was ordered to remove its poles and wires from the streets and put them in the alleys and get a new franchise.

Johnstown Company to Increase Stock.

The stockholders of the Johnstown Independent Telephone Co., of Johnstown, Pa., will, on June 6, vote on the proposition to increase the capital stock of that corporation from $600,000 to $2,000,000. The purpose of the large increase is not stated, but it is regarded as practically certain that it will be approved.

F. H. Woods Defends Minor Bill Which Was Recently Vetoed by Governor of Nebraska.

An article in the Lincoln, Neb., Daily Star of April 18, quotes President F. H. Woods, of the Independent Telephone System of Nebraska in a refutation of some of the criticisms of the Minor bill made by Governor Aldrich. Among other things Mr. Woods says:

"I very much regret that Governor Aldrich did not have the time to thoroughly digest and understand what was intended to be accomplished by the Minor bill, which he vetoed. I feel sure, after having read that veto, that the governor thoroughly misinterpreted this act.

"The records of the railway commissioner's office show 469 telephone companies in Nebraska operating 721 exchanges. Of this number the Bell company operates about 100 exchanges. In but 28 cities and towns are there two exchanges competing for business there, leaving nearly 700 exchanges operated by more than 400 Independent companies that have a monopoly of the business in those communities.

"There is not now nor has there been any law in this state against the purchase of non-competing exchanges, and this fact has left the Independent system open to the menace of destruction.

"If this bill had become a law, mergers could not have occurred in but 28 out of 721 towns having telephone exchanges. The provisions relating to mergers thoroughly protected the interests of minority stockholders and the public was guaranteed security against increases in rates by the proviso that no rate could be increased until after a physical valuation of the applicant, and approval by the commission."

He further states that the bill would not prohibit the organization of competing companies in the future, or abrogate franchises; that the physical connection provision was compulsory and not merely permissive, as asserted by the governor; that the railway commission law does not include telephone companies in such a way as to make the Minor bill unnecessary.

The article contains a detailed statement of the course of the bill through the Legislature, to refute the governor's statement that the bill was hastily considered.

Changes in Officers of Bell Companies Show Centralization of Operating Control in Chicago.

At a recent meeting of the directors of the Michigan State (Bell) Telephone Co., held at Detroit, changes were made among the officers, as a result of which B. E. Sunny was elected president, Alonzo Burt vice-president and treasurer, B. W. Trafford, vice-president, B. S. Garvey, auditor, J. G. Wray, engineer, and L. G. Richardson, general counsel.

As Mr. Sunny is now vice-president of the American Telephone & Telegraph Co., and president of the Chicago Telephone Co., Mr. Burt president of the Wisconsin Telephone Co., Mr. Richardson president of the Central Union Telephone Co., and Messrs. Garvey and Wray are respectively auditor and engineer of the Chicago Telephone Co., these changes represent a further step in the standardization of administration and operation and uniformity in plan among the Bell companies of the middle west.

No consolidation of companies is indicated, but it is held probable that similar changes may occur among the officers of other Bell companies, including the Chicago Telephone Co.

A further step in the reorganization of Bell management in this section which is making Chicago the operating headquarters for a large territory is shown in the resignation of Angus S. Hibbard as second vice-president and general manager of the Chicago Telephone Co. and in other official changes just announced. Mr. Hibbard will be attached to the office of Theodore N. Vail, president of the American Telephone & Telegraph Co., and his special mission will be to bring the telegraph and telephone businesses into closer working relations.

Other changes in the organization of the Chicago Telephone Co. were as follows:

Bernard W. Trafford, of Detroit, Mich., formerly vice-president of the Michigan State Telephone Co., was elected second vice-president in charge of the commercial department.

Alonzo Burt, of Milwaukee, Wis., president of the Wisconsin Telephone Co., was elected treasurer.

Horace F. Hill, of Indianapolis, Ind., formerly vice-president of the Central Union Telephone Co., was appointed general manager, in charge of plant and traffic.

L. G. Richardson, of Indianapolis, Ind., formerly president of the Central Union Telephone Co., was appointed general counsel.

The title of Benjamin S. Garvey was changed from auditor to general auditor.

Mr. Hammer Notifies Utah Secretary of State of Telephone Conditions in Salt Lake City.

Following up the exploitation of facts in recent issues of TELEPHONY as to the real relations of the Rocky Mountain Bell Telephone Co. and the Utah Independent Telephone Co., E. W. Hammer, of Salt Lake City, has communicated with the secretary of state of Utah, Hon. C. S. Tingley, advising him of his belief that competition no longer exists between the two companies, and offering to place before him all the evidence to that effect at his command. Mr. Hammer's letter is as follows:

I address you at this time to inform you of the following facts:

1. I am informed that more than 50 per cent of the capital stock of the Rocky Mountain Bell Telephone Co. is owned by the American Telephone & Telegraph Co., a corporation.

2. That I am informed that all of the capital stock of the Utah Independent Telephone Co., a Utah corporation, is owned by said American Telephone & Telegraph Co., notwithstanding the fact that said shares of stock appear upon the books of the company as being owned by others.

3. That both the Rocky Mountain Bell Telephone Co. and the Utah Independent Telephone Co. are operating telephone systems in the state of Utah.

4. That I am informed that the business affairs and policy of the Utah Independent Telephone Co. are dominated and controlled absolutely by the said American Telephone & Telegraph Co., and the Rocky Mountain Bell Telephone Co., and that said latter companies regulate and fix the prices of tolls in both the Utah Independent Telephone Co. and the Rocky Mountain Bell Telephone Co. in the same territory, and all competition between said two telephone companies has been destroyed and does not at present exist, but on the contrary the policy pursued by said American Telephone & Telegraph Co. and the Rocky Mountain Bell Telephone Co. is one calculated to prevent competition in the telephone business in Utah on the one hand and a control of the prices of tolls in both of said local companies.

Believing that the acts of said corporations as above related are in violation of the laws of the state of Utah and very much to the prejudice of the citizens of said state, I hold myself ready to furnish you any further evidence in support of the above statements that is at my command, and would most respectfully request that such proceedings be taken in the premises as are provided by law.

It is believed that the secretary will at once take steps to investigate the conditions and, if convinced that competition is actually at an end, will take such steps as are open to him to again set matters upon a proper basis. His reply to Mr. Hammer's letter and advice as to his further actions are awaited with keen interest by those who are interesting themselves in straightening out the telephone tangle in Salt Lake City.

The Clement Automanual System—Design and Operation

Abstract of a Paper on Telephone Traffic Presented at the Los Angeles Convention of the American Institute of Electrical Engineers, April 25-28, 1911—The Conclusion, to be Printed Next Week, is a Comparative Analysis of Traffic Efficiency of Manual and Automanual Systems

By Edward E. Clement

The fundamental principle underlying the Clement automanual system is this, that the calling subscriber should be met at once by the response of a human intelligence which can direct the proper automatic agencies to satisfy his wants;

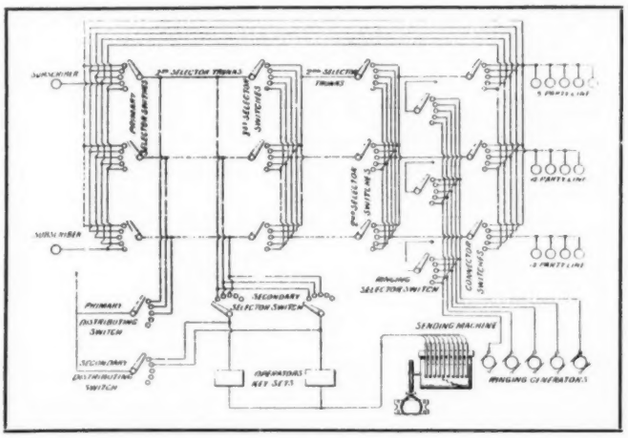


Fig. 1. General Arrangement of Automanual Exchange.

or in other words, that the correct method of handling telephone traffic is to sell service, and not rent apparatus.

Stated broadly, the automanual is a combination of the manual and automatic methods which contemplate (1) centralization of automatic apparatus; (2) the employment and concentration of operators; (3) correct subdivision of a system for traffic handling.

With regard to the operators, I have restricted them to the indispensable and essential function requiring intelligence, that is, ascertaining the subscriber's want, and setting up a signal by which automatic apparatus may be caused to supply that want. The regular duty of a subscriber's operator permits no departure from this rule, since even emergency calls can be handled by switching them to another operator specially provided for such duty. The automanual operator works at 100 per cent efficiency all the time, and since her duties are simple and unvarying, she has the opportunity of becoming expert, and moreover, requires no tedious or expensive preliminary training.

It is possible to concentrate all the operators at a single operating center, which can take care of all the switching or exchange centers in a district or even in an entire city, handling all calls with maximum efficiency, and giving uniform service regardless of the nature of the calls, or the time of calling, twenty-four hours per day. This concentration, and the distribution of the total load over a single group of operators, without regard to where the calls originated, effects great economies by eliminating all but the summatic load fluctuations, to which the total number of operators on duty is at all times directly proportional. A further gain in efficiency is due to better discipline and control of the operators where they are concentrated. Perfect subdivision, within physical limits peculiar to each territory served, is possible with this system, and benefits of operator-centralization are realized regardless of the extent of subdivision. Moreover, no talking trunks or talking apparatus are tied up beyond the actual point of entry of the calling line until the operator's duties are concluded. I call this a "clearing-house system," because all traffic is handled, directed and checked from the operating center or clearing-house, without any subscriber connections passing through the operating center. The cable plant between switching centers is designed with a sole view to traffic requirements between these centers, and without any regard to the location or connection of the operating center.

Fig. 1 is a simplified skeleton diagram showing the general lay-out of an automanual exchange equipment having a capacity up to 10,000 lines. In this diagram, five subscribers' lines are shown, one of which is a five-party line, two others are four-party lines, and the remaining two are individual lines. Ringing is supposed to be five-party selective.

In this diagram, for the sake of clearness, only the most elementary forms of apparatus are shown. The switches, however, are supposed to represent two-motion, one-hundred-point, electromagnetically-driven, step-by-step automatic units,

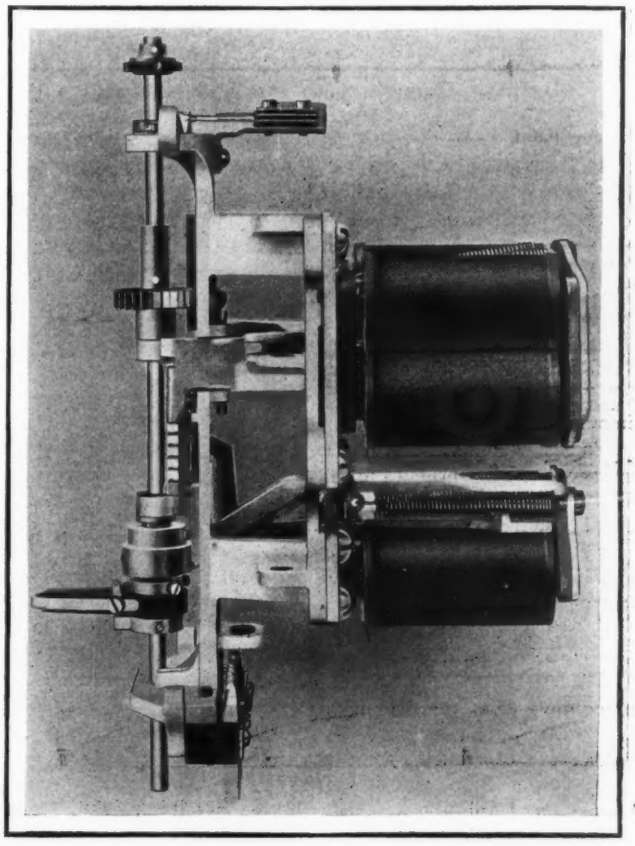


Fig. 2. Movable and Actuating Parts of the Automanual Switch.

of uniform type, shown in Fig. 2. Percentage trunking is employed throughout the system shown, and the switches are equipped with banks (not shown in Fig. 2) containing ten vertical rows of ten contact pairs each. The motion is around and up, this precedence of the rotary motion affording certain advantages. The entire system is built up of interchangeable units.

In Fig. 1, the circuits have been laid out so as to show in a

simple way the analogy between this system and a manual switchboard system, the same operations being performed in the same manner throughout, but automatically instead of manually. For example, the subscribers' lines terminate on primary selector bank contacts which correspond to the answering jacks of the manual board, and they are also multipled to calling contacts in the banks of the connector switches, which correspond to the multiple jacks on the manual board.

The wipers of the primary selector switches constitute the equivalents of plugs which co-operate with the subscribers' answering jacks, but are mechanically driven thereto instead of

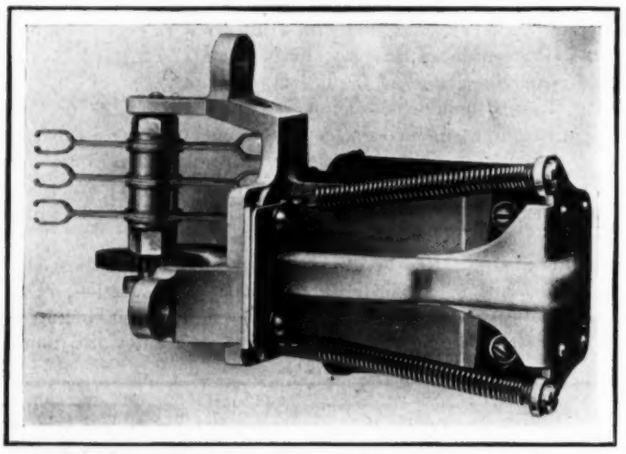


Fig. 3. Rotary Switch—Magnet Similar to That of Fig. 2.

by the hand of an operator. The first selector switches similarly correspond to the calling plugs of manual pairs, and the first selector trunks extending between the primary and the first selector switches are the equivalents of the cord circuits. The second selector and connector trunks are the same as trunk lines between different positions on a switchboard, the method of switching at each step corresponding to the selective insertion of another plug to add another link in the connection by a manual operator. The secondary selector switches constitute the equivalents of the operators' keys associated with the cord circuits, and the sending machine operated therethrough sends impulses to work the selector and connector switches, instead of spoken words to direct an equivalent number of successive operators. The primary distributing switch performs the function of the operator's mind in selecting an idle cord circuit for any given connection, and the secondary distributing switch is the equivalent of a monitor distributing calls among the operators, by directing each one of them when to answer.

The ringing selector switches take the place of the selective buttons of "B" or trunk operators so that the selection of the desired generator to ring a particular subscriber is directed by impulses from the sending machine, instead of by spoken words proceeding from the original or "A" operator. To complete the analogy, the releasing means for all the switches when in service are controlled by the connected subscribers, thus corresponding to the supervisory signals, by which in a manual system the subscribers can instruct the operators to clear out.

All subscribers' lines are represented by terminals in the primary selectors and in the connector banks, and while the method of trunking shown is only a contributory feature of this lay-out, the diagram will be fully described. I might state in passing that there are a great many features of special design in the automanual circuits, but they involve so much detail that the limits of the present paper do not permit my presenting them at this time.

The progress of a call is from the calling subscriber through an idle primary selector, which becomes automatically attracted to his line, and thence through a secondary selector, similarly attracted, to an idle operator. Under no conditions is this departed from. The principle is that the operator should be brought into direct touch with the subscriber at the very outset, precisely as in a manual system. Having ascertained the number, the operator sets up this number on her key set and sends impulses through her circuit to the first selector, second selector, connector, and ringing selector switches, thus establishing the wanted connection and also starting agencies in the connector circuit which continue thereafter automatically to ring until the called subscriber answers or the calling subscriber hangs up the receiver. After initiating the call, the calling subscriber's line is connected through the primary and secondary selector switches to the operator in every case, and, further movement of a subscriber's hook or the repeated opening and closing of the circuit, will not reach more than one operator, and cannot disturb general traffic conditions. This happens sometimes through change of purpose or the like, and it is highly essential that the automanual operator should not experience the slightest delay, nor pay attention to anything except the rigid rule of getting the number and setting it up. After the operator has answered the calling subscriber is given full control of the connection, and can clear out and release all of the apparatus at any time up to the moment when the called subscriber answers. Thereafter, the called subscriber assumes control of the connector switch, which he can release so as to clear his line by merely hanging up his receiver. This prevents tying up the called line.

When the operator connects the sending machine to the switches, through her key set, impulses are sent in groups corresponding to the several keys depressed, that is to the number wanted, as well as to the number of the generator required to ring the wanted party, if it be a party-line. The first group of impulses steps around the first selector switch to pick out a group of second selector trunks, and an idle trunk in that group, leading to the wipers of the second selector switch. The second group of impulses works this second selector switch to pick out a group of connector trunks, and an idle trunk in that group, terminating on the wipers of a connector switch in whose banks appear the terminals of the wanted line. Successive groups of impulses are then transmitted to step the connector wipers around and up to the wanted line terminals.

Associated with each connector switch is an auxiliary or ringing selector, having a wiper sweeping over terminals which are connected to several ringing generators, as shown, each of

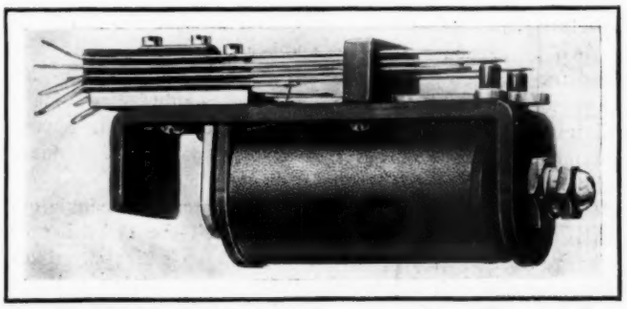


Fig. 4. Relay, with Forwardly Extending Armature and Springs.

which supplies current at a distinctive frequency. In actual practice, for five-party ringing, the frequencies are determined so that they cover about the same range as the older four-party harmonic frequencies, without the same liability to interference.

For these auxiliary selectors, in this and other parts of the system, a simple form of rotary switch is employed, shown in Fig. 3.

The magnet unit used in this switch is the same as the interchangeable units employed in the larger switch, and the wipers are always rotated in the same direction.

At the last stage in a connection, when the wanted subscrib-

er's line has been picked out by the connector switch, and the ringing selector has been set so as to bring into service the proper generator, that generator is then automatically connected by a ringing relay to the subscriber's line to ring his bell. At all other times the ringing selector remains disconnected.

The control of the primary selector switches is through relays on the switch racks, responsive to line current. These relays complete local circuits to place test potential on the test contacts of the primary selector switches and at the same time close starting circuits for the idle trunks and operators. A type of relay is employed both for the lines and switches, shown in Fig. 4, which is the result of much thought and experiment. This relay has the flux bar bent over at both ends, the inner end being screwed to the rack, and the outer end carrying the adjustment for the magnet core. The bell crank armature is dropped through a slot punched in the flux bar near the rack end, and the springs are mounted on this same end, so that both the armature lever and the springs extend forwardly. This construction gives a long leverage with a very small air gap which is essential for this class of work, and also exposes the core adjustment and spring contacts.

The operation of the secondary selector switches is essentially the same as that of the primaries. As soon as the primary distributing switch has determined the primary trunk to be connected to the calling line, the secondary or operator's switch tests until it reaches the trunk, where it stops, and remains connected to the trunk until finally released, which may be by the calling subscriber hanging up after the operator has answered, or at the conclusion of a cycle of impulses, whereby a complete connection is established. The interrupters and sending machine are timed so as to deliver at the rate of about one thousand impulses per minute, with the battery voltage normal. Any drop in the battery which would affect the switches is compensated by a corresponding drop in speed of the sending machine. At the normal speed stated, however, a high number line in the calling group and a high number trunk in the corresponding group can both be found and connected in less than one and a half seconds. Where the numbers are low, the action is practically instantaneous.

Each operator has three key-sets mounted on a suitable desk (Fig. 5), each having associated with it certain signals which guide the operator in the performance of her duties. The key-set in general appearance and arrangement is quite similar to the keyboard of an adding machine or typewriter, consisting of a number of strips of ten keys each (Fig. 6), numbered from one to naught in each vertical row. One of the signals associated with these keys is a calling lamp, which is lighted automatically when the key-set becomes connected through the secondary switch to a first selector trunk already connected to a subscriber's line. Observing the signal, the operator asks the subscriber for the number wanted, and proceeds to depress the corresponding keys or buttons. She then presses a separate starting key, and groups of impulses, corresponding to the buttons depressed, will thereupon be transmitted as already stated. The wanted subscriber's bell is automatically rung at intervals until the call is answered, but in the meantime it is both unnecessary and undesirable to hold the operator, and so the secondary switch is cut off automatically by the sending machine as soon as the ringing starts.

In practice duplicate sending machines are arranged as shown in Fig. 7, with gang switches enabling either to be thrown in or out in case of necessity. Each machine comprises a cam drum working ten pairs of number contacts, with separate controlling contacts and a commutator. On one side

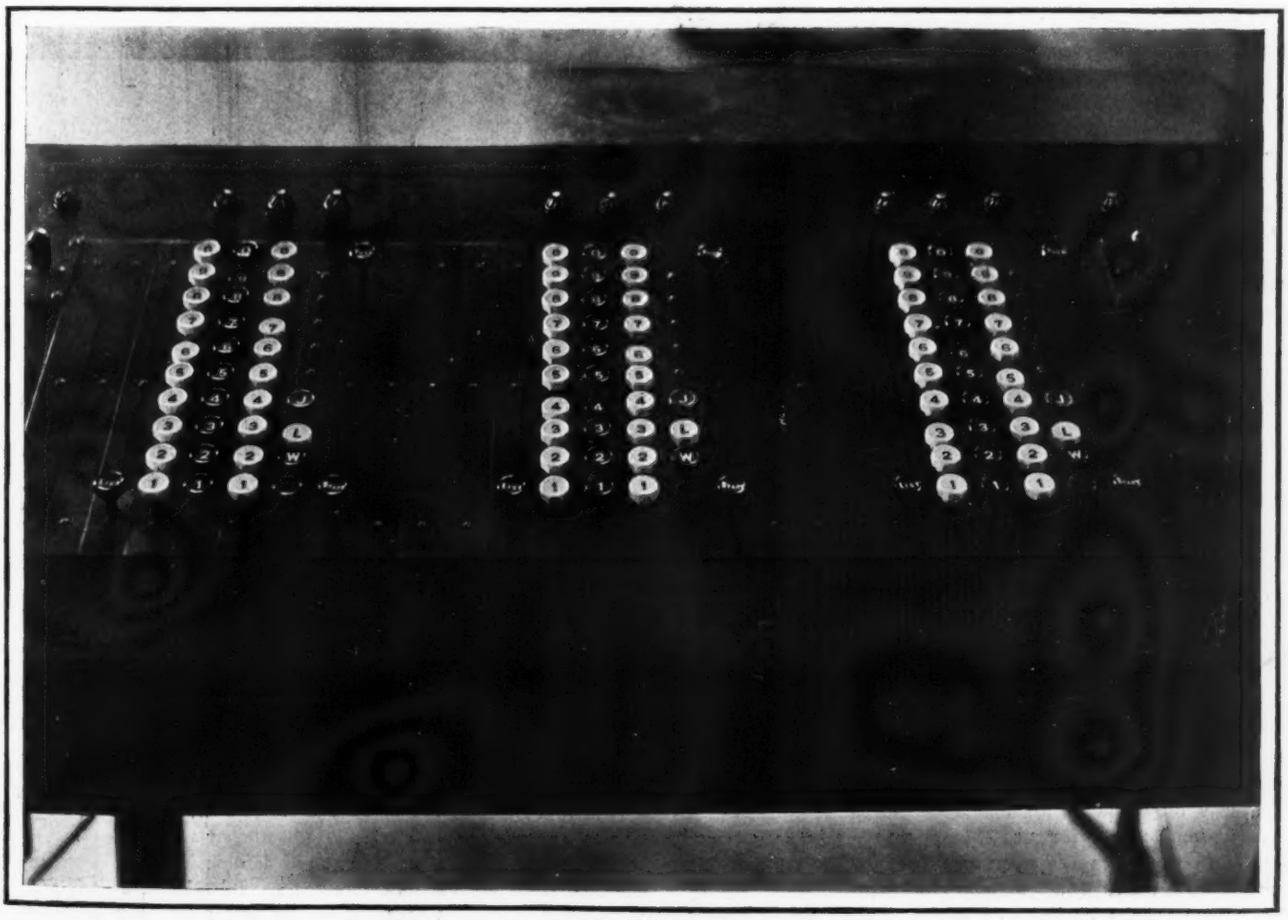


Fig. 5. Operators' Desk with Three Key Sets as Installed at Ashtabula Harbor, Ohio.

the commutator is grounded and on the other connected to all of the number spring sets, and the number cams are so located that in the rotation of the drum they make and break at points of zero potential on the commutator, thereby avoiding

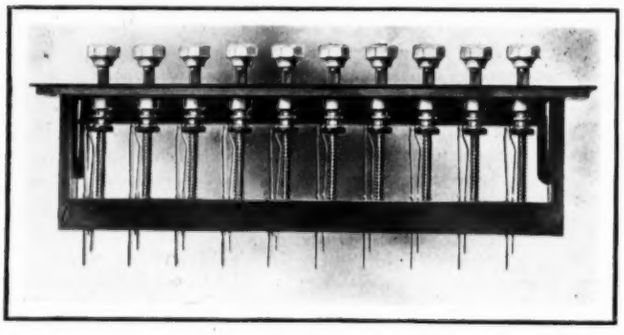


Fig. 6. Keys Combining Simplicity, Positive Action, Minimum Effort for Operation.

sparking at the selective terminals. The operator's key-set is normally disconnected from the sending machine, but is connected thereto when the starting button is pressed, by means of a switch and relay, and after the whole number of groups of impulses has been transmitted, the secondary selector is released automatically.

From the moment the calling subscriber takes down his receiver until the calling lamp lights before the selected operator, that operator has no duty to perform nor is her attention distracted. If in the course of events there should be waiting calls, they do not appear before the operators until the latter are free to attend to them, which is an important point. The instant a signal appears, however, the operator, being free, disposes of that call. The minimum answering time in this system is practically zero. In handling a call, the operator has only the buttons to depress, and these are especially designed to require as small an expenditure of energy as possible. The swinging bar engages the locking flanges on the different key stems, but the keys are raised by light coiled springs. It is unnecessary to release a key for correction as the depression of another key in the same strip releases the one previously set.

The description of operation which I have given applies of course to trunking between exchanges as well as to connecting lines in the same exchange. The operation is no different,

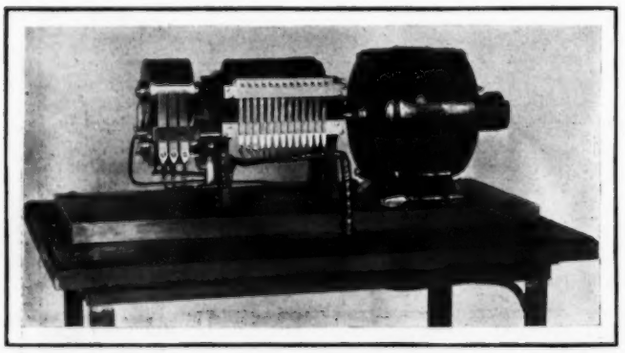


Fig. 7. Sending Machine, which Furnishes Impulses to Operate Switches.

since the trunks between switches may extend any distance. Obviously only one set of operators is required, because all working impulses go forward though the first selector trunks, that is to say from the operator, through her trunk to the point where the call originated, and then forward through the talking trunks or links as they are built up. Thus, no talking trunk is brought into service or tied up until it is actually required, and moreover, since the subscribers automatically release when they hang up, no trunk is tied up an instant longer than is required.

Fig. 8 is a diagram showing the clearing-house connected to three exchange switching centers, *A, B, C,* directly connected by talking trunks *T T* shown in light lines, and all connected to the clearing-house by special or operators' trunks *O T* shown in heavy lines. At each of the exchange centers three subscribers' stations are shown connected to the primary selector switches *P S,* and the selective switches, *S S.* The operators' trunks have secondary selectors *O S,* containing in their banks terminals for the primary selector links. At the clearing-house the operators' trunks *O T* are arranged for distribution among the operators' key sets in a manner similar to that shown in Fig. 1. It will be observed that the trunks *T T* between exchanges, which carry the traffic load, are absolutely independent of the operators' trunks, and have no relation whatever to the clearing-house. The operators' trunks are worked at 100 per cent efficiency all the time, each being tied up for any call during a period of a few seconds only while the wanted connection is being established and being then free to take on another call and so on. The number of these

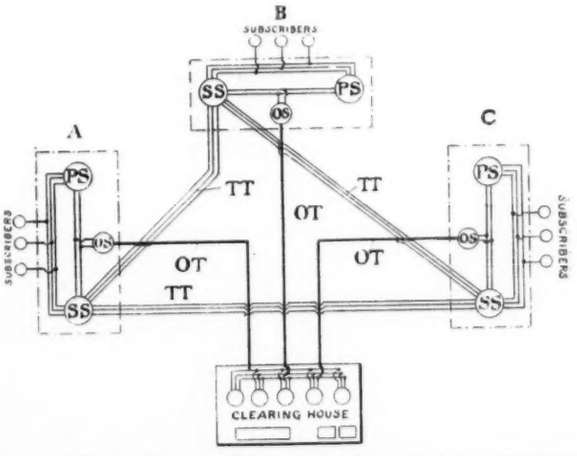
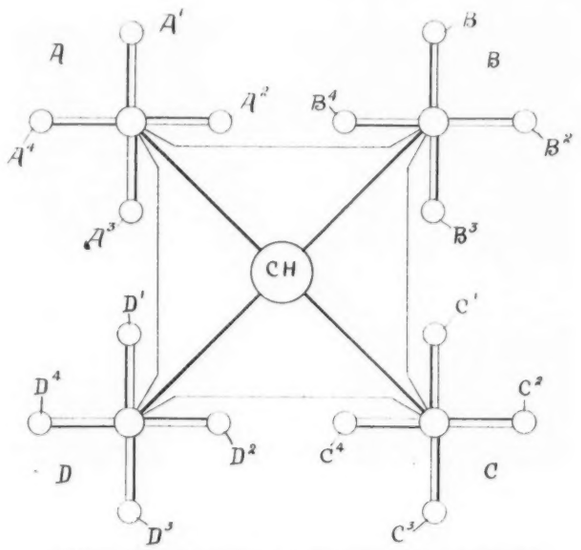


Fig. 8. Clearing House Connected to Three Exchange Switching Centers.

trunks required to any switching center is proportional to the originating traffic therein, and would usually be less than one per cent of the number of lines terminating at that center. The course of a connection may be traced as follows:

Suppose a call to originate with the first subscribers' line in the exchange *A.* This is automatically connected to an idle primary selector switch, *P S,* thence through the link of that switch to an idle secondary selector switch *O S,* and an operators' trunk line *O T* to an idle key set at the clearing house. Thus the calling subscriber is confronted by the operator at the instant of his access to the first piece of apparatus, that is the primary selector in his own exchange, in the same manner that he would be confronted by a manual operator physically present in that exchange. The operator in this case having ascertained the number wanted, sets it up on her key set, and presses the starting key. Impulses are then transmitted from the sending machine at the clearing-house, out over the operators' trunk, through the secondary selector at exchange *A,* to the first selector switches of the set *S S* which is permanently connected to the primary selector *P S* to which the calling subscriber is temporarily connected. The impulses corresponding to the first digit of the number cause the first selector switch *S S* to select a local connector or selector, or a trunk leading to the desired exchange, which we will assume in this case to be *B.* The trunk terminates there in a second selector switch *S S* and the impulses corresponding to the next digit cause this second selector to pick out either an idle connector containing the

line wanted, or an idle third selector through which the connector can be found by a fourth set of impulses, depending on the size of the exchange *B*. As soon as the connection is completed, that is to say, as soon as one complete cycle or set of impulse groups have been transmitted from the sending machine, its connection with the operators' key set is automatically opened, and the secondary selector *O S* at the originating exchange, *A*, automatically drops off and disconnects the operators' trunk, being immediately thereafter available for another call. The control of the connection through the talking trunks and switches remains entirely with the connected subscribers. When they hang up their recivers, all the switches are instantly cleared out, and ready for further use.



CLEARING-HOUSE AUTOMANUAL SYSTEM, WITH OPERATING CENTRE COMMON TO SEVERAL AUTOMATIC SWITCHING CENTRES.

Fig. 9. Clearing House Principle Applied to Four-District System.

Fig. 9 shows the clearing-house principle applied to a subdivided system having four districts, *A B C D*, the first of which has sub-centers *A1 A2 A3 A4*, the second sub-centers *B1 B2 B3 B4*, and so on. The clearing-house *C H* is connected through operators' trunks *O T*, the method of handling calls being the same as that explained in connection with Fig. 8.

(To be concluded.)

Obligations of a Public Utility Company to the Public, and of the Public to the Company.

Arthur S. Huey, vice-president of H. M. Byllesby & Co., Chicago, recently outlined the obligations of a public utility company to the public, together with the obligations of the public toward such a company.

Here is what a utility company owes the public: The rendering of good, adequate and continuous service; fair and reasonable rate schedules; no discrimination among customers of the same class, or between classes of customers for like service; extension of service into all populated sections of the municipality and suburbs; earnest endeavor to market the greatest possible volume of service; adoption of approved inventions and developments in machinery and apparatus; sound financial management; a high standard of physical maintenance; public spirited attitude in all matters concerning the general welfare and advancement of the community; broad and liberal business administration; keeping faith with the people in all agreements, promises and announcements, and strict obedience to law and no participation in politics.

Mr. Huey says that, providing the public utility companies live up to the foregoing obligations to the public, the following is due from the public to the corporations:

The same degree of confidence, encouragement and respect that one business man accords to another, that any citizen expects from his neighbor; willingness to permit a fair profit on the capital, energy, ability and risks embodied in the undertaking, to permit a profit greater than mere interest, which could be obtained without effort or hazard; disregard of attacks by popularity seeking agitators; willingness to recognize and reward improvements in service; recognition of the fact that the operation of utilities differs fundamentally from merchandising or manufacturing; reasonableness in demanding large capital outlays for improvements not strictly necessary to the rendering of adequate service, such as placing wires underground in cities of small and medium size; to make prompt payment of bills, because the company cannot render the service demanded if its only source of income is retarded; careful consideration of legislation, municipal, state and national, which would hamper and curtail the development of utilities; recognition of the fact that no utility company can well serve a municipality if it is not in prosperous condition, and able to secure the investment of new capital on favorable terms, and treatment of all questions affecting public utilities in a fair-minded way, looking upon them as business questions without regard to political considerations.

A "Telephone Authority" for Great Britain.

Under this title Herbert Laws Webb read a paper before the London Chamber of Commerce on February 17, 1911. In this paper Mr. Webb called attention to the manner in which the Government telegraph monopoly has retarded telephone development. He charged that the telegraph business has been so managed that the interest on the original capital, which has not been cared for by sinking fund provisions, now has to be paid by the tax payers, while all additional capital for the telegraph development has to be supplied by the tax payers, and is not charged to the capital account. Mr. Webb advances reasons why under political control a technical business cannot be operated on business lines, and asserts that the working cost per telegraph message is higher now than it was 40 years ago.

Within a short time the telephone business will become a complete state monopoly under the agreement for the purchase of the National Telephone Company's system.

Mr. Webb predicts that under such a monopoly the business would not be widely developed, nor conducted with high efficiency. He considers efficient and broad service to be more important than low rates to the business man. He believes the solution of the difficulty to be a plan which will bring an ample influx of capital for the development of the industry, and proposes the creation of a "Telephone Authority," on the lines of the Port of London Authority, which would take over the telephone plant of the National Telephone Co., and of the Post Office and operate and develop the telephone business of the whole country on commercial lines. The general direction of the Telephone Authority would be conducted by a board of management on which, besides the stockholders, the Post Office, the Municipalities, and the Chamber of Commerce would be represented.

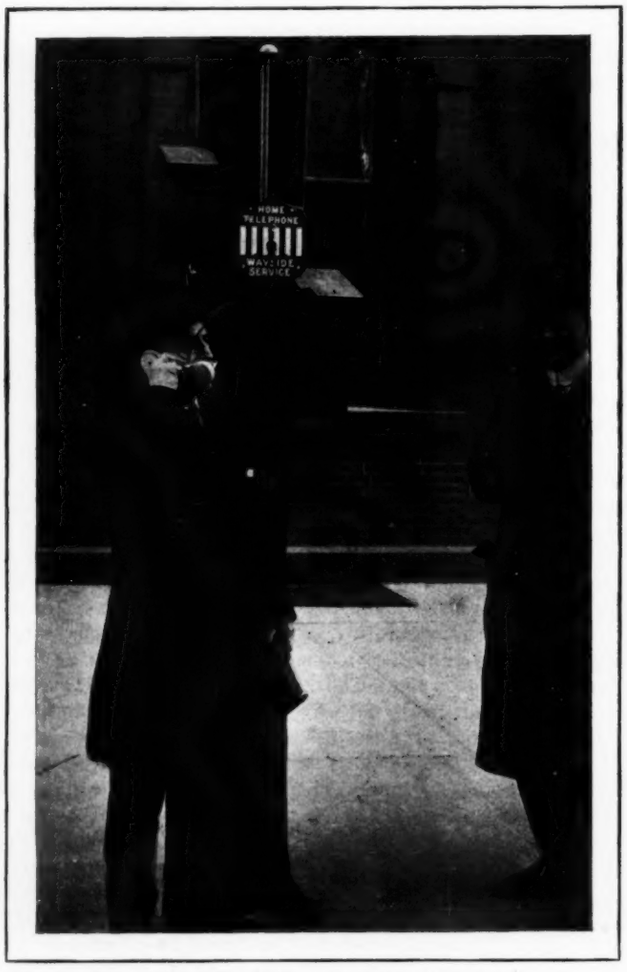
Mexicans War by Telephone.

Advices from San Diego, Cal., state that war by telephone is the latest move in the Mexican revolution. According to advices brought direct from Ensenada to Tia Juana insurgent leaders at Alamo several times telephoned Governor Vega, of Lower California, at Ensenada, that they were coming to take him prisoner.

Wayside Telephone Service Meets with Ready Favor at Troy, N. Y., Proving Efficiency at Once.

Mr. E. L. Grauel, manager of the Commercial Union (Independent) Telephone Co., Troy, N. Y., is pushing the installation of the wayside telephone service. The first instrument was installed near the Arba Read steamer house in that city. About fifty instruments have been placed in the business section of the city and others are being installed as rapidly as possible.

At the disastrous fire in the Boardman building, not long ago, the chief of police telephoned from the wayside station at the corner adjacent to the burning building for the ambulances and surgeons who attended six or eight firemen who were badly injured by falling walls. The station was in use during a large part of the day by both the police and fire chiefs and proved to be of great value.

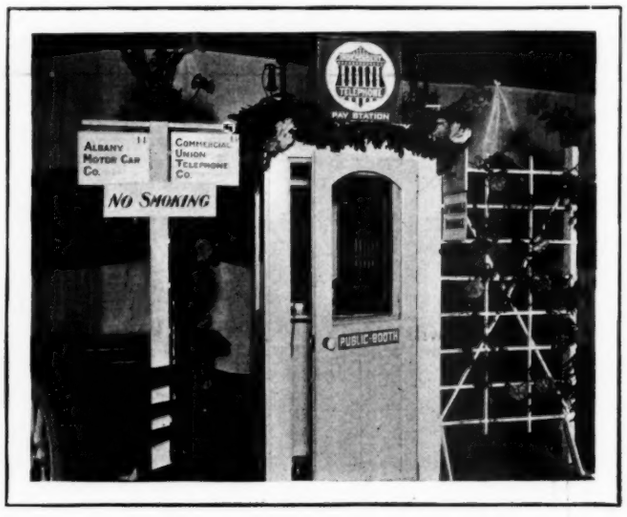


Fire Chief Byron Using Troy Wayside Service.

At the automobile show, held at the state armory recently, the wayside service was freely demonstrated. The company furnished each exhibitor with two wayside telephone sets, one for use in the booth and the other for the use of the demonstrator. The armory had been equipped for the occasion with about thirty wayside stations beside the regular pay station at the booth. The booth, here shown, was also fitted with the usual apparatus.

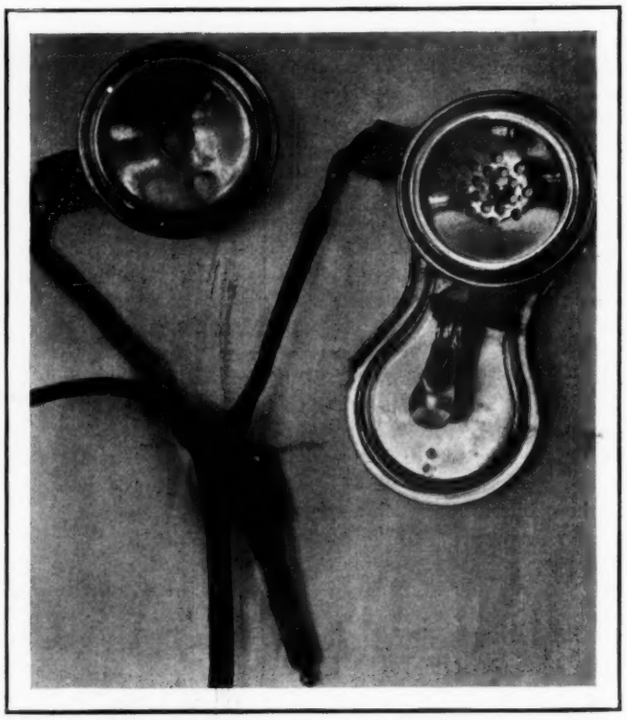
Two types of the wayside improvements are now being distributed. One is the protected set, which might be exposed to abuse, as when carried in the tool box of an automobile. It is this set that has been supplied to the fire department of the city. The other set of instruments weighs but 2¼ ounces and may be easily carried in the vest pocket. The rental per set is but fifty cents a month.

In Troy the service is not entirely complete. The company plans to ultimately place the wayside stations at every fire alarm box. In Glens Falls the Commercial company has installed the service along the same lines as it



Troy Company's Booth at Automobile Show.

is now following in Troy, and the Albany Home Telephone Co. has now practically completed its installation in that city. The first long country route will be along the automobile road to the Adirondacks. Beginning at Troy, the wayside stations will be placed at all important places along the road to Saratoga and to Newcomb in the Adirondacks.



Wayside Equipment Used at Troy.

Long distance calls may be made from these stations in the usual manner. Each wayside set is numbered and a record kept at the office so that by giving the toll operator the number of the set she may give the desired long distance connection, or the call may be reversed.

New Automatic Telephone Apparatus and Circuits

Abstract of a Paper Presented at the Los Angeles Convention, American Institute of Electrical Engineers, April 25-28—The System Described is Being Developed by the Kellogg Switchboard & Supply Co., of Which the Writer is Chief Engineer—Paper Concludes With a Description of Switchboard Circuits

By Charles S. Winston

In order to prevent misunderstanding, it may be well to state that throughout this paper a switchboard which requires automatic calling devices or dials at the subscribers' stations and no operators at the central office will be referred to as an automatic switchboard.

The work of designing, perfecting and manufacturing an entirely new line of automatic equipment requires an immense amount of study and experiment. For some time the company with which the writer is associated has been developing apparatus which will enable it to manufacture automatic equipment which will meet all of the requirtments of automatic, automatic-distributing and semi-automatic. In this article a description will be given of parts of this apparatus which it is not expected to use in practice, but which may be of interest from an historical standpoint, as well as of apparatus which with certain changes will, in all probability, be put to practical use in the near future.

Different types of switches are not required for each of these branches of automatic, as the switches which are suited for one can, with slight modifications, be used equally well for the others.

Up to the present time, the "Strowger" switch is the only one which has been used to any extent. When used as a selector, the wipers of this switch, which are attached to the shaft, move vertically in response to current impulses caused by the operation of the subscriber's dial, and then rotate horizontally until idle trunk contacts are reached. The switches of the five following types will do the same work as that done by this switch, but in a radically different manner. For the lack of more satisfactory means, the switches will be referred to as:

1. Circular polywiper.
2. Circular long and short step with one driving magnet.
3. Circular long and short step with two driving magnets.
4. Double rotary with back release.
5. Double rotary with forward release.

1. *Circular Polywiper Switch.*

Fig. 1 shows a plan view of the circular polywiper switch and a side elevation with certain parts in section. For all practical purposes it consists of two separate switches, each

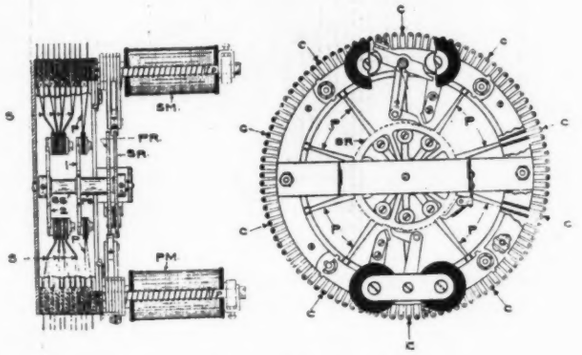


Fig. 1. Circular Polywiper Switch.

with a distinct driving magnet, wipers and bank contacts, which are built together in one structure to economize space and to facilitate wiring.

Instead of following the usual practice of attaching flexible cords to the wipers and thus continuing the circuit to the desired contacts of the bank, wires are carried to circular metal strips immediately below but insulated from the rows of individual contacts. The wipers serve to bridge together the individual contacts and these circular strips. In this manner all cord troubles are eliminated, although there are two movable contacts in each connection instead of one.

The bank consists of five circular rows of contacts, each row being divided into ten equal groups. There are two sets of

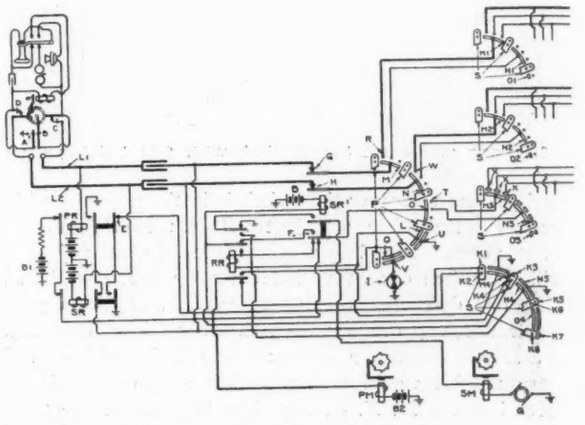


Fig. 2. Wiring of First Selector Polywiper Switch.

wipers—the primary P and the secondary S. The former consists of ten separate single wipers which are mounted upon 36-deg. centers on the plate 1, which is rigidly secured to the shaft $P\ S$, while the secondary wipers consist of 10 sets of four wipers each, mounted similarly upon plate 2, which in turn is fastened to the shaft $S\ S$. The two shafts $P\ S$ and $S\ S$ are attached to ratchet wheels $P\ R$ and $S\ R$ resepctively and through them the primary wipers are controlled by the magnet $P\ M$ while magnet $S\ M$ controls the secondary wipers.

When in normal position, the primary wipers P rest upon contacts C and the secondary wipers S upon the contacts in line with and below contacts C, while these connections will be broken when the wipers are moved forward by the operation of the driving magnets. When the wipers have moved 11 steps the same condition will again be met and the switch will again be in normal position.

In Fig. 2 is shown the wiring of a first selector, individual to a line, using a switch of this type, with the wiring of a subscriber's telephone including a calling device. When the switch is normal the 10 primary wipers will be in the positions shown at P, while S represent the positions of the various secondary wipers. The common strips M. N, O, $M1$, $M2$, $M3$, etc., are each assocatied with 10 contacts instead of three as shown. The system illustrated uses a single source of current for both signaling and talking, while a ground return circuit is used for operating the relays which in turn operate the magnets which move the switch wipers.

In order to assist in giving an understanding of this switch, the method of operation of the circuit shown will be described briefly.

A subscriber desiring to converse with a second subscriber will remove his receiver from its hook, thus establishing a

path for current through relays *P R* and *S R* and the apparatus in his instrument. He will then operate the calling device, thus connecting springs *A* and *B* to ground and breaking contact *c* a definite number of times, while current flowing from ground over line conductor *L2* will maintain relay *S R* in the energized position. Each time the circuit is broken in this manner, relay *P R* will be de-energized and contact *E* closed, thus sending current through the primary magnet *P M*, and causing the primary wipers of the switch to make a certain number of steps. (Secondary contacts *K1* and *K2*, *K3* and *K4*, *K5* and *K6*, *K7* and *K8* are connected together

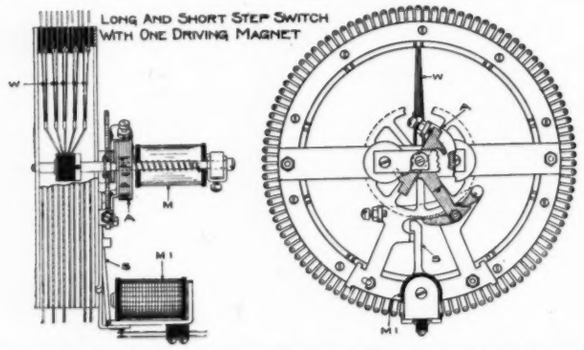


Fig. 3. Long and Short Step Switch with One Driving Magnet.

through wipers whenever the switch is in the normal position.) Immediately thereafter and just before the calling dial returns to normal, both line wires remaining grounded, contact *D* will be broken once, thus holding relay *P R* energized and causing one de-energization of relay *S R*. For the purpose of illustration, suppose that the subscriber desires conversation with a second subscriber whose number begins with one. The primary magnet would then take one step, establishing connections between *M*, *N*, *O*, *L* and *Q*, and *R*, *W*, *T*, *U* and *V* respectively. Immediately thereafter, the de-energization of relay *S R* as above explained, will cause the energization of relay *S R'*.

It will be noticed that the energization of the latter relay will establish a circuit from the negative pole of battery *B*, through the winding of this relay, back contact of relay *R R*, through the normally open contact *F* of relay *S R'* to the contact plate 0, through the wiper to contact *T*, and thence to common plate *M3* of the secondary contacts. The energization of relay *S R'* will also close a path from the alternating-current generator *G* through the secondary magnet *S M*, thus moving forward the secondary set of wipers *S*. If the private contact *x* is busy, due to a ground on the corresponding contact of some other switch, relay *S R'* will remain energized and the switch wipers will be stepped ahead until a contact is found which is clear, when relay *S R'* will be de-energized and the switch will come to rest. The de-energization of relay *S R'* will close the talking circuit from the subscriber's instrument, through contacts *G* and *H*, and the primary wipers and contacts, to the secondary wipers and thence to a second selector.

When the subscriber returns his receiver to its hook, relays *P R* and *S R* will be de-energized, thus causing relay *R R* to be energized by current flowing from ground at switch contact *U* to the negative pole of battery *B1* and locking relay *R R* through *S R'* to battery *B*, thus cutting off the circuit from battery *B1*. The energization of the latter relay will again establish a circuit through the secondary magnet *S M* to ground at *N5*, while the energization of relay *R R* will cause current to flow from battery *B2* through the winding of the primary magnet *P M*, a primary wiper and contact *V* to ground, through the interrupter *I*. The energization of these two magnets will be continued till the wipers have been driven ahead until they rest at *P* and *S* upon the normal contacts between the groups, at which time the circuits for all relays will be opened and all apparatus will be at rest in its normal position.

In the circuit shown, but five of the ten primary groups of contacts are used. It will, therefore, be seen that a large number of contacts are available for use as "off normal" contacts if the circuit requirements make it desirable. This feature of the switch is one of its chief advantages, but the difficulties which are necessarily met with in assembling and in wiring make it impracticable from the standpoint of manufacture and operation.

2. *Circular Long and Short Step Switch with One Driving Magnet.*

As shown in Fig. 3, the construction of the long and short step single driving magnet switch is similar in general appearance to the polywiper switch, there being 10 circular groups of 10 contacts each. However, there is but a single set of wipers, which when moved forward by the driving magnet *M*, the magnet *M'* being de-energized, passes over one group of ten contacts at each step. If, however, magnet *M'* is energized at the time when the wipers are being stepped forward, the movement of armature *A* will be shortened by the stop *S* and the wipers will move from one set of contacts to the adjacent contacts for each energization of magnet *M*. As will be seen from this statement, each one of the 10 circular sets of contacts corresponds to a row of contacts on a vertical and rotary switch. That is, in this switch the wipers instead of moving a certain number of steps in one direction and then rotating at right angles, move a certain number of long steps and then take short steps until they arrive at contacts of a trunk line which is not in use, in the case of a se-

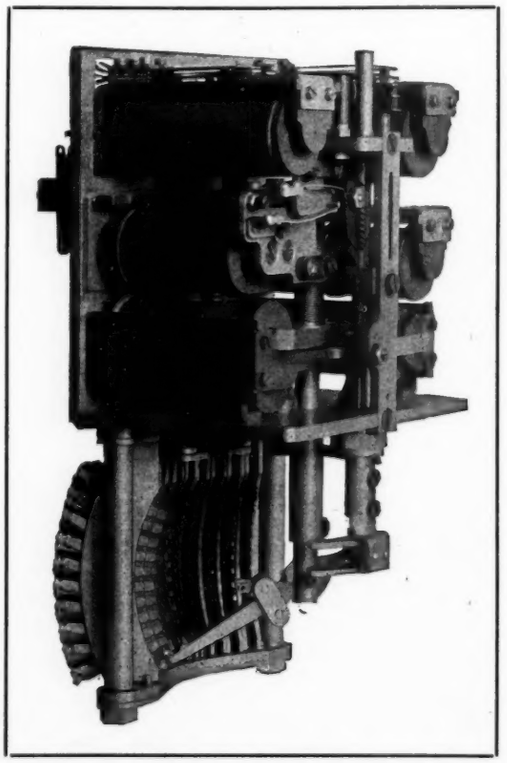


Fig. 4. First Selector, Double Rotary, Back Release.

lector, or until the contacts of the desired line are reached, in the case of a connector.

3. *Circular Long and Short Step Switch with Two Driving Magnets.*

This switch is very similar to the one just described. The only difference of importance is that instead of using a magnet to limit the stroke and hence to move the wipers from one

contact to the next, two separate magnets are employed, one for giving the long steps and one for giving the short.

4. *Double Rotary Switch with Back Release.*

It will be seen upon referring to Fig. 4, which shows this switch as a first selector, that the contacts are mounted in 10 separate strips or groups, each of which has 10 sets of contacts (each set consisting of two line contacts and one private

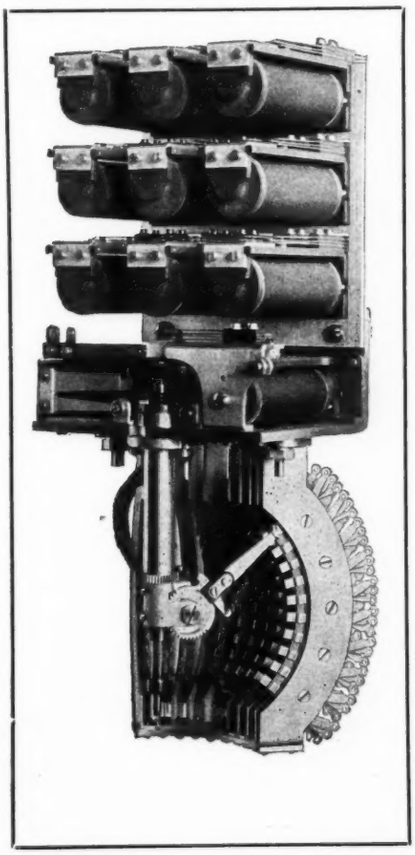


Fig. 5. Connector, Double Rotary, Forward Release.

contact) arranged in an arc of a circle, so that when completely assembled, all contacts point inwardly toward a common center.

Instead of using a single shaft, with the wipers rigidly attached, which moves vertically to select a group of contacts and then revolves horizontally to select a trunk, two shafts are used in this switch. One, to which the wiper frame is directly connected, rotates in a horizontal plane to select the group. The second is so connected to this frame that its downward movement gives the wipers a second rotary movement, thus stepping them upward into engagement with the bank contacts. Primary and secondary magnets are used for accomplishing these results, and the switch is returned to normal by means of a release magnet. Because of the relative arrangement of shafts and wipers, the latter move four or five times as great a distance as the former for each energization of either the primary or secondary driving magnet, and hence the movement of the armatures of these magnets is exceedingly small. It has been found from experiment that, due to this construction, switches of this type operate satisfactorily when the voltage of the storage battery used therewith is as low as 35 and that the height to which the voltage may rise does not affect the operation, as current of any voltage which the relays, used with the switch, can stand without injury may be employed. Hence, it is not necessary to use two sets of batteries—one for discharge while the other is being charged—or to resort to the use of extra storage cells or counter e.m.f. cells to maintain a constant voltage.

This switch is constructed so that the switch proper, consisting of relays, wipers and driving magnets, is supported by the frame of the contact bank in such a way that the switch can be removed instantly if trouble occurs without it being necessary to unsolder wires. The contact bank is fastened to the iron framework which supports all switches and hence the multiple wires do not support the bank when a switch is removed.

5. *Double Rotary Switch with Forward Release.*

This switch, which is shown in Fig. 5 as a connector, is similar in many respects to the switch just described. The arrangement of the bank contacts is similar although more space is provided in this switch in order to facilitate the multiple wiring. Primary and secondary magnets give the wipers a double rotary motion but, in releasing, the magnet which has caused the vertical movement is again brought into use and the wipers are driven forward to the end of their vertical stroke. When this position is reached, a projection carried upon the wiper arm releases a retaining pawl, which has kept the wipers in the position into which they were driven by the primary magnet, thus allowing the wipers to move horizontally due to spring tension. When they have returned in this direction as far as possible, which is to a position directly above their normal position, a second retaining pawl, which after each vertical step has kept the shaft in its vertical position, will be released and the wipers will be returned to normal position.

As the release of this switch is accomplished by driving the wipers forward, clean contacts are at all times assured. In back release selector switches the last contacts in all rows are used infrequently, and hence they become coated with dirt and grease, thus preventing satisfactory connections when it becomes necessary to use them. Another advantage of this type of construction is that the wear on all contacts will be equal and hence the life of the bank increased.

During the last year a life test was made with a switch of this type. The switch was subjected to all the mechanical and circuit changes which it would undergo in practice in operating 1,378,000 times, which is equivalent to the use which an average switch in an exchange of 10,000 lines would receive in 37 years' service. As, however, the wipers continuously passed over the tenth row of contacts, instead of each of the ten an equal number of times, the wear on these contacts was equal to what it would be in 370 years of service.

Automatic Calling Devices.

Second only in importance to the selector and connector switches, if it is not of equal or even greater importance, is the calling device used at the subscriber's station. The design of a calling device which will meet all conditions of service is an extremely difficult problem. The work to be done requires complicated mechanism which, as it is to be used by

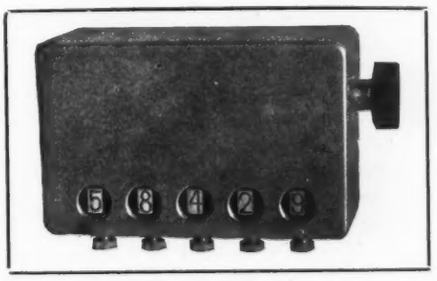


Fig. 6. Substation Calling Device.

unskilled hands, must be strong, positive in operation and "fool-proof." If a switch fails to properly perform its functions an attendant who is always present can remedy the trouble, but trouble in a calling device makes necessary a trip of the troubleman at an expense which may not be small.

It is possible to design calling devices of a great many dif-

ferent types, and numerous patents have been issued for schemes of various kinds. In connection with the automatic development referred to, calling devices of six or seven different types have been made. Some are of the "finger-hole" type, others employ a lever for their operation, while one has been developed in which the subscriber sets up the number of the desired station on the face of the device before sending the impulse. A cut of this device is shown in Fig. 6. Upon referring to this figure it will be seen that there are in the top plate five circular openings through which digits are visible. Extending from the side of the device below these openings are five buttons which when turned either to the right or to the left change the figures from 1 to 0. Therefore, it is possible to set up any number between 00000 and 99999, or in other words, to use this device as shown in a one-hundred-thousand line system.

The method of procedure in making a call with this device is as follows. The subscriber removes the receiver from its hook, turns the buttons in the calling device (this can also be done before removing the receiver, if desired) until the proper number appears, and turns the lever at the right hand end until a stop is reached. The mechanism within the device will then operate and cause the operation in seccussion of the selector and connector switches. During the time that the impulses are being sent, the figure-changing buttons, as well as the sending lever, will be locked so that the subscriber cannot interfere with the signaling.

The advantages of an instrument of this type are obvious. With calling devices of the usual type, a very large percentage of the errors made in calling are due to mistakes of the subscribers, and not to the apparatus, but such errors cause complaint and dissatisfaction and often the loss of subscribers. A calling device of this type will eliminate such errors entirely. The objection has been made to any device in which the number is set up, that if a wrong station is called and the subscriber sees that the proper number is before him, he will know that the fault is in the equipment, and the eloquence of the troubleman cannot change his view. This is seemingly very weak argument.

One of the calling devices, of the finger-hole type, which has been developed possesses several novel features. In operating, the finger is placed in the hole associated with the proper number and the front plate rotates until a stop is reached. When the finger is withdrawn the front plate rotates backward, under the control of a very simple governor, breaking a contact a definite number of times. The mechanism is not locked at any time and the subscriber must use care to complete the movement of the dial and not to retard the front plate during its backward stroke. If either of these precautions is disregarded the call will not be made properly. The dial is very simple and inexpensive and the cost of maintenance would unquestionably be very low. It is, however, extremely doubtful whether, in the present state of automatic, the general public can be relied upon to use the precautions necessary for the satisfactory operation of so simple a dial, but if automatic exchanges increase in number it will not be surprising to see a simple dial of this sort used, as soon as the telephone users are sufficiently educated.

Connecting Calling Line to Switches.

Various methods have been employed in automatic systems for connecting the subscribers' lines to the first selectors. The old Strowger plan, which is used in a large number of automatic installations, provides an individual first selector for each line, and it is very doubtful whether any of the other schemes which have been used up to this time are its equal when the cost of maintenance is considered as well as initial cost. Several years ago engineers saw that an individual first selector was more expensive than necessary and various substitutes have been devised. The scheme which up to this time has been most extensively used is the so-called "Keith Unit" which has been described frequently.

Another scheme which has been proposed is the "back-selecting" scheme. Two relays, a line and a cut-off, are furnished for each line, and when a call is initiated, the energization of the line relay sets in motion the wipers of a line-finding switch, which travel over bank contacts until they come to contacts which are attached to the calling line, where they stop and thus connect the calling instrument to a first selector.

Another plan which has not yet been used in practice but which has many advantages is to use a small 10- or 15-point line switch for each line. In addition to the switch mechanism, which includes one driving magnet, two or possibly three relays per line are required in order to bring about the necessary circuit changes. With this scheme, when a subscriber removes his telephone from the hook, a line relay will be energized and current will be sent through the driving magnet, which will step forward the switch wipers. When contacts which are attached to an idle first selector are reached, the movement of the wipers will cease an dthe circuit will be continued from the subscriber's instrument to the selector. As one switch is required for each line, it is possible that, although it is comparatively inexpensive, the cost will be greater than that of either of the two other schemes mentioned, but a slight additional cost is seemingly justifiable in order to make it impossible for trouble in the switch to throw out of service more than one line. With the individual line switch, trouble in the line switch may prevent the associated line from calling, but it can have no effect upon a second line. The circuit of a switch of this type will be shown later in connection with the description of the circuits of a complete two-wire system.

(To be concluded.)

The Original Old Gentleman Writes London Daily Mail and is Quoted by Chicago Tribune.

We present herewith the original picture of the old gentleman with gold rimmed spectacles, gold headed cane, side whiskers, overshoes, umbrella, black broadcloth suit, tall hat, reading glasses in the left upper waistcoat pocket, emphasized eyebrows, aquiline nose, and positive chin, who knows the world is going to the bow-wows, says the Chicago *Tribune*. Many copies have been made, but this is the original. It was not known that he remained extant, but he discloses himself in a letter to the London *Daily Mail*.

"Take the telephone for example," he writes. "The perverted genius who invented it had the wild idea that it would add to the comfort and convenience of life. And the mad fools who use it are most of them under the delusion that it saves time and labor. But does it? On the contrary, it increases the labor and makes greater demands upon the time of every one who is short sighted enough to subject himself to its influence. He develops influenza or gastritis or neuritis or some form of what is only the terrible modern disease of telephonitis." (This because the telephone has increased the pace of life by giving the business man 200 highways for his activities, whereas without it he had at the most ten or twenty.)

"I believe that appendicitis, which is ravaging the country, is to be attributed to telephones, and the prevalent epidemic of measles is only one of the effects of the overstrain of the motor car. We have nerves and dyspepsia and trouble with our appendices because we have no leisure and no comforts."

We know that after the fine old-fashioned gentleman had written the letter, of which the foregoing is a part, he put on his rubbers and walked five miles with his old-fashioned gold headed cane to an old-fashioned restaurant, where an old-fashioned waiter made him welcome, and where he had an old-fashioned chop, and some very fine old port. And there we leave him, as comfortable as he can be even in England in this day and age.

New Equipment for Railway Telephone Circuits

This Department is Devoted to the Progress of the Telephone in all Branches of Railway Operation—Practical Men are Invited to Make it the Medium for Circulation of New Ideas, and Bringing About General Discussion of Methods and Results.

The New Sandwich Signal Transmitter for Railway Telephone Lines.

Simplicity of operating mechanism and of wiring are strong features of the latest pattern signal transmitting box made by the Sandwich Electric Co.

Although patents which have been applied for fully cover the novel features of this device, they have not yet been issued, and TELEPHONY is able to publish at this time the first authentic description of the device to appear in any journal. It has only been on the market a few months, and many railway telephone men are not yet familiar with the construction and operation of the improved form.

Its central operating feature is the large toothed wheel appearing at the front of the photograph, Fig. 2, and diagram, Fig. 3. The spacing of the teeth of this wheel, and the speed of its backward rotation determine the length and frequency of the impulses which are transmitted over the line to operate the step-by-step mechanism at the called station. When it is borne in mind that this is the controlling feature of the apparatus and that all other elements are related to it only for the purpose of controlling its movement, or preventing improper connections in the circuits which it operates, it becomes very easy to understand the mechanism.

The current which passes over the line does not pass through this wheel. One side of the line circuit terminates on spring 33 of relay 32, the winding of which is connected in a circuit including wheel 15, battery 31 and contact 23, Fig. 6. When the

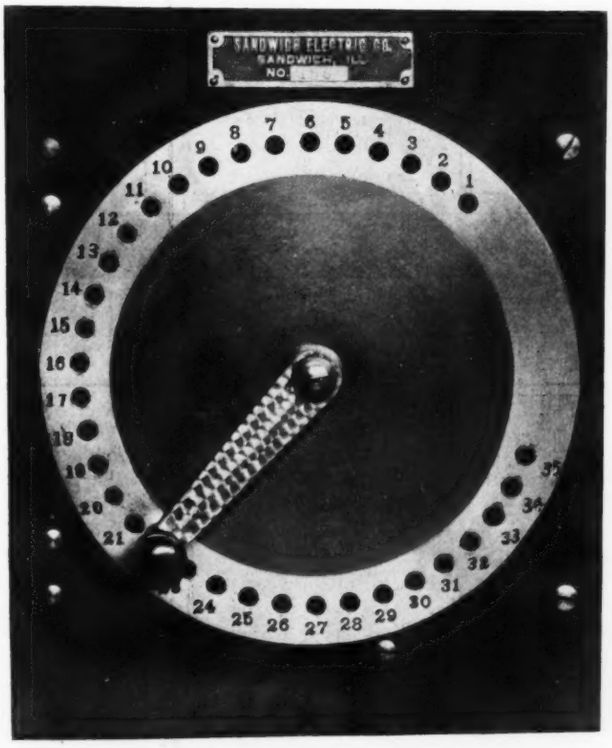


Fig. 1. Front of Sandwich Signal Transmitting Mechanism.

operation of the toothed wheel closes the circuit through relay 32 it draws up its armature, 33, and allows current from battery 36 to pass over the line 34-35. This current lasts as long as spring 23 is in contact with wheel 15. When spring 23 is opposite a notch there is no circuit through relay 32; it is not energized, and consequently its armature 33 falls back so there is no current flowing over the line from battery 36. The alternate passing of teeth and spaces over spring 23 thus causes the line current to be started and stopped, creating a series

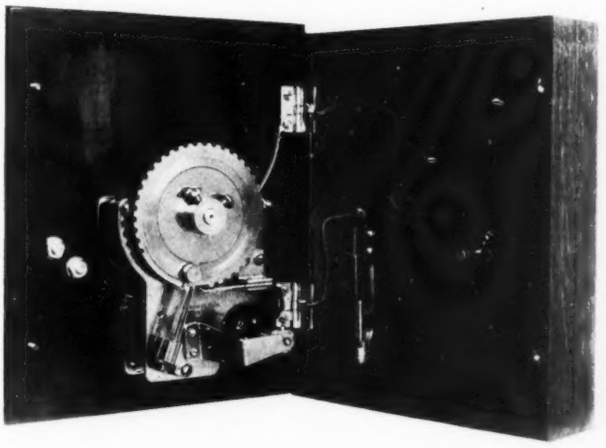


Fig. 2. Interior of the Box Showing Mechanism and Wiring.

of impulses each of sufficient duration to advance the toothed segment 44 of the selector at each station on the line (Fig. 4).

It is generally understood that the relation between the segments 44 and the contact arm 48 is so arranged that at each station contact with the spring 47 is made after a different number of impulses, so that by determining the number of impulses the sender may pick out the particular station he wants. Before any station can be called the relay 37 at the called station has to be operated, so that after each successive step of the segment 44 it will be held in the position to which it has been driven by the impulses going over the line. The magnet 45 and its armature 46 are the agents for stepping up the segment.

Reference to Figs. 2 and 3 shows that, as soon as the wheel is caused to commence rotating in counter-clockwise direction, spring 23 comes in contact with the long space on wheel 15. At the same time the element 24 is carried to the right by friction, so that it closes an electrical circuit between the wheel and spring 28. Thus the circuit through battery 31 and relay 32 is closed in two places and a long impulse passes over the lines to pull up relay 37, Fig. 4. Once this relay is pulled up, although it is normally quick-acting under the first impulse, the short circuiting of one winding through the armature 43 makes it slow-acting. Relay 45 is capable of operating on the back stroke of wheel 15 to advance 44 step by step to the desired position, but 37, being slow-acting, holds its armature, and acts as a stop for the segment. As soon as the wheel 15 has been rotated sufficiently far around to the right to bring spring 23 to a notch, the true function of the friction element 24 becomes apparent. This is a very ingenious and simple mechanism for accomplishing a necessary purpose. If at this moment contact 25-28 were not closed, relay 32 would fall back, as there is no circuit closed between 23 and 15, because the spring is opposite a gap. An instant later a circuit would be closed between 23 and the first tooth, then open at the next gap, and so on. Thus an impulse would be transmitted over the line for every tooth. As during this movement of the wheel it is manually controlled,

and may be operated too fast to allow the relay 45 at the called station to keep step, it is obviously necessary that the impulses should not be transmitted at this time, but rather during the return movement of the toothed wheel, the timing of which is controlled by clockwork.

The short-circuit of the contacts 23-15 by 25-28 holds relay

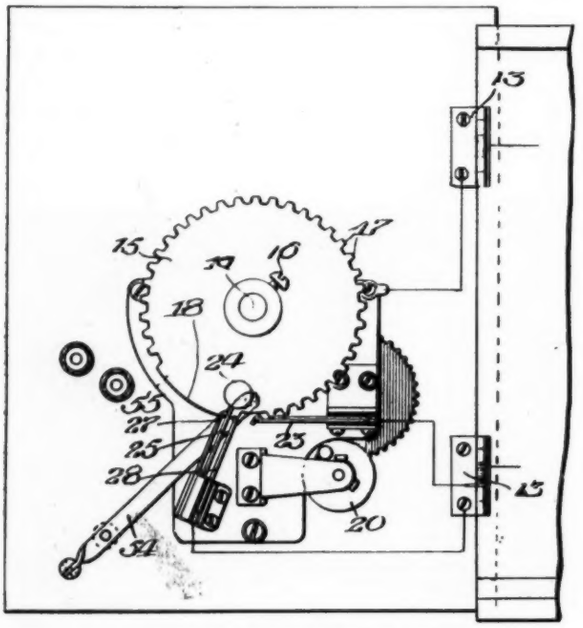


Fig. 3. Operating Details of Signal Transmitter.

32 in its operative position until wheel 15 has been rotated as far as the stop. As soon as this is reached the operator lets go of the handle on the operating lever at the front of the box. As he has rotated it to bring a numer of teeth corresponding to the number of the called station past spring 23, he has incidentally wound up the clock spring between the cover of the box and the wheel 15. The tension of this spring causes wheel 15 to rotate back to its original position. The speed of rotation is controlled by an escapement mechanism and governor. The latter is shown at the lower right hand corner of the mechanism in the photograph. It may be made to operate fast or slow by tightening or loosening the screw shown in Fig. 1 just below the dial.

As wheel 15 returns to its normal position the teeth and spaces alternately pass over contact 23, causing the alternate

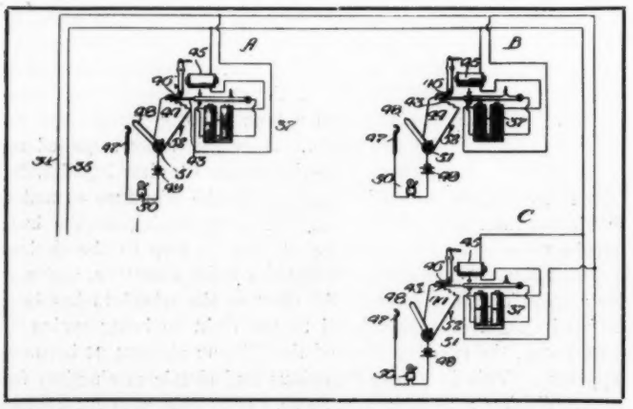


Fig. 4. Skeleton Drawing of Selector Mechanism Used at Stations.

operation and release of relay 32. This transmits corresponding impulses from battery 36 over line 34-35, causing relay 45 to step up the segment 44 one space for each tooth in wheel 15. When the long space on 15 comes under 23, arm 48 is in contact with spring 47 at the station called, but at no others.

Signal 50 is operated during the time the long segment of wheel 15 is passing over spring 23, and for an interval thereafter until slow-acting relay 37 releases its armature, on discontinuance of the current after a gap has come opposite spring 23.

Should it be desired to arrange this calling mechanism for ringing a desired station until the operator answers, or calling several stations in succession before transmitting the signal, a stop is placed on wheel 15 and a lever, 54, is provided to be operated by a button from the front of a set. With this arrangement, when the button is pressed, wheel 15 instead of rotating back to its initial position can be stopped while spring 23 is still in contact with the long segment, and re-operated one or more times to call as many additional stations as the operator wishes to bring in on the line. Then the button can be released as the last station is called, and the bell at each station will ring as wheel 15 completes its final rotation.

The method of operating the device is so simple as to hardly require explanation. Opposite a number corresponding to each station on the line there is a hole in the brass dial plate. (Fig. 1). When the handle is pulled out toward the operator the lever may

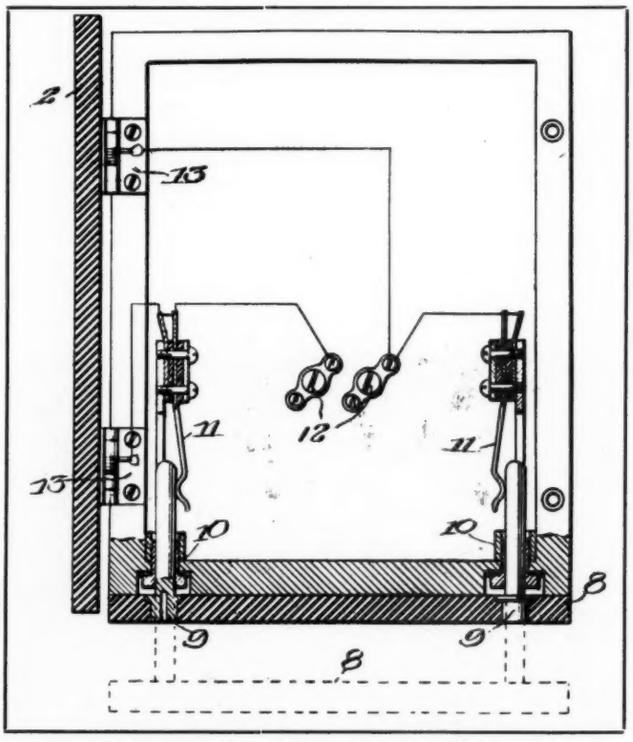


Fig. 5. Construction of Jacks and Wiring in Back of Box.

be rotated freely until it is opposite the hole corresponding to the number desired. Then the handle is pushed toward the plate, driving a pin through the wheel.

The wheel may then be rotated by this handle in a clockwise direction until a pin at the back of the wheel comes in contact with a stop on the mounting plate. When this is reached the operator releases his hold of the handle, and the wheel, driven by the operating spring within the box, returns to its normal position, carrying with it the contact wheel 15 to effect the circuit changes which are required for operating the distant selector.

The wiring is so arranged that a box may be slipped over permanently connected terminals in an instant, contact being made with the plugs extending through the bottom of the box. A binding post is connected in multiple with each jack, and holes for the wires are bored in the back of the box, so that the relay connection may be brought in to these binding posts instead of to the jacks, if this is desired.

Kellogg Booster Circuit Gives Good Transmission Over Heavily Loaded Railway Telephone Lines.

The Kellogg Switchboard & Supply Co. special "booster" railway telephone circuit is proving very popular with railway dispatching officials, because of its unusual efficiency.

This circuit is now in operation on many lines, handling train movements, and is also used on railway telephone message circuits. No additional batteries are required, yet 25 stations can be spoken to at any time without detriment to transmission.

Various estimates by competent railroad men show that this Kellogg circuit and arrangement furnishes from 25 to 100 per cent improvement in transmission.

With the Kellogg transmitter the voice is clear and strong. Clear-cut articulation and recognizable voice waves mean greater safety, as every word and syllable is distinctly heard at the most distant end of the line, regardless of the number of stations which may be cut in, with operators listening.

Every station receives the dispatcher's voice with the same volume and the dispatcher hears each and every station distinctly, no matter how many on the line are listening.

Railways Operating 41,717 Miles of Road by Telephone.

The report of the Block Signal and Control Board, of the Interstate Commerce Commission, for the year 1910, just issued from Washington, gives a table showing the use of the telegraph and the telephone in transmitting train orders. There are 215 railroads using the telephone for this purpose. Of these 148 use the telephone exclusively. The total number of miles operated by these lines is 215,003. Of this mileage, 175,211 miles are operated by telegraph, and 41,717 by telephone.

Considering that it was not until late in 1907 that the first practical experiments in telephone train dispatching were made, this is a remarkable record of development.

Prominent Railroads Order Telephone Equipment for 417 Stations.

Telephone train dispatching with selective calling is being rapidly taken up in American railroads, both in new installations and in extensions of a service eminently satisfactory. Among the orders just received by the United States Electric Co., of New York and Chicago, for Gill selecters are the Seaboard Air Line for 74 stations, the Atlantic Coast Line for 88 stations, the Canadian Pacific Lines West for 68 stations, and the Canadian Pacific Lines East for 187 stations. This road will soon be equipped from ocean to ocean with selective calling and telephone train dispatching.

New Telephone Dispatching Circuit of Queen & Crescent System.

The Queen & Crescent System has completed the construction of a telephone train dispatching circuit paralleled by a local message telephone circuit on the second district of the Cincinnati, New Orleans & Texas Pacific Railway, which extends from Danville, Ky., to Oakdale, Tenn., 134 miles. The Gill selector was used. The telephone circuits were put in service at 7 a. m., Sunday, April 16, for dispatching trains and transmitting local messages. Although most of this division is double tracked, traffic is very heavy and the train dispatching circuit is an unusually busy one. It is expected that the telephone circuits will greatly simplify the work of handling traffic. There are more than twenty tunnels on the division, a statement which gives an indication of the character of the country through which the road is built.

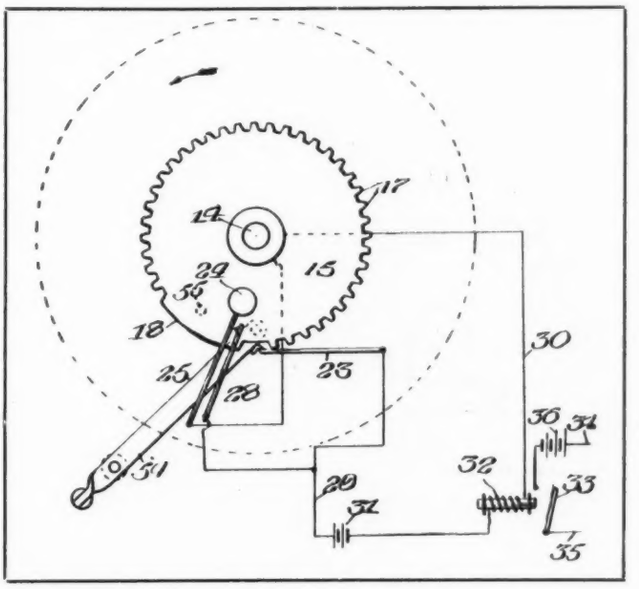


Fig. 6. Diagram Showing How Sandwich Call Box Operates.

Train Dispatchers to Meet in Baltimore, June 20.

The Train Dispatchers Association of America will hold its annual convention in Baltimore, June 20. It is probable that the railway telephone will come up for extensive discussion at this meeting

Kellogg Telephones Specially Designed for Railway Circuits and Equipped with Device for Equalizing Transmission at Several Bridged Stations.

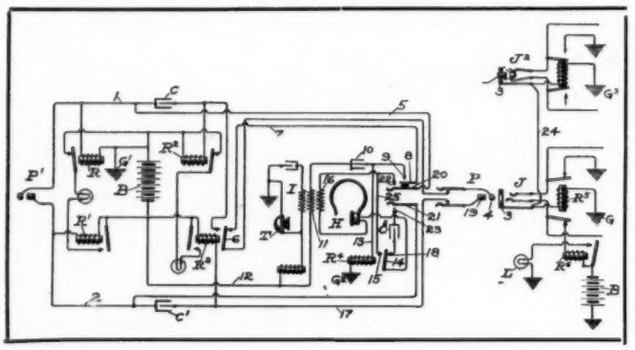
From the Patent Office

Max W. Zabel

CENTRAL TELEPHONE SYSTEM.

J. D. Holmes, Pasadena, Cal., patent 988,711, Apr. 4, 1911, assigned to Dean Electric Co., Elyria, O.

A busy test circuit is set forth in which, if the line circuit connected for instance to the jacks J, J^2 is busy, a potential higher than earth will exist at the ring contacts 3. When the operator tests, the circuit will extend from ground at G', battery B, ring of jack J^2, conductor 24, ring 3, tip 4 of the plug P, conductor 5, armature 6, back contact of the armature,



conductor 7, contacts 8 and 9, condenser 10, winding 11, 12, and back through the battery B to ground. The equilibrium of the condenser which was previously charged is thus disturbed and causes an impulse to be induced through the coil 16 and the operator's receiver. A branch of this circuit passes through conductor 13, relay R^4 to ground at G^2, energizing the quick-acting relay R^4, which pulls up its armature 14, thereby interrupting the connection between the operator's receiver and the listening spring 21 at 14, 18, and closing a local circuit through the operator's receiver H, 14, 15, 25 and 16. The impulse induced from the testing circuit passes through this local circuit, indicating to the operator the busy condition of the desired line.

MOUTHPIECE.

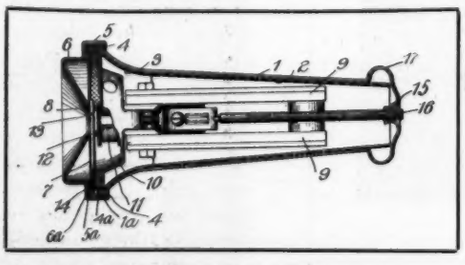
L. Steinberger, New York, N. Y., patent 988,907, Apr. 4, 1911.

A mouthpiece is made massive in structure and properly rounded to avoid abrupt corners so as to be free from lodging places for bacteria. It is also designed to strengthen the weakest points. The usual bridge provided with the holes through which the sound passes is made thick and extends to the rear end of the mouthpiece. The holes are conical and all corners have curved surfaces of substantial radius.

TELEPHONE RECEIVER SHELL.

J. Halldow, Elyria, O., patent 988,706, Apr. 4, 1911, assigned to Dean Electric Co., Elyria, O.

This is a reinforced receiver shell. Shell 1 is of tubular



conformation which is enlarged to receive the ear cap. The ring 4 has a plurality of holes 4a into which the body portion of the receiver shell is forced by means of a center punch. This prevents removal of the ring 4 even though it may not be a tight fit in the shell. A shoulder 4b serves to communicate the stress exerted upon the ring 4 to the body portion 1 of the shell. An enlarged annular portion 17 is formed at the smaller end of the shell. Insulating tubes 2 and 3 protect the interior parts from the metallic shell 1. The metallic shell is coated with some suitable insulating compound.

RECEIVER CASING.

Steinberger, New York, N. Y., patent 988,906, Apr. 4, 1911.

A receiver shell has a hollow shell portion open at both ends with an ear piece at one end and a cap at the other secured to the shell by screw threads. Two ring-like members are provided upon the shell, one held in place by the cap and the other by the earpiece. The one which is held in place by the cap serves to support the receiver when on the switchhook.

TELEPHONE TRANSMITTER.

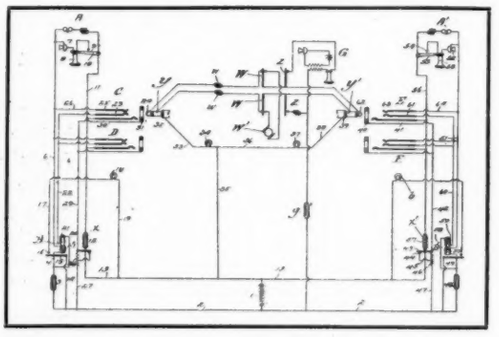
C. R. Rogers, Waverly, N. Y., patent 988,819, Apr. 4, 1911.

A mouthpiece has a flaring outer edge of substantially the same diameter as the transmitter, and the transmitter casing is extended to unite with this mouthpiece at its outer periphery. A recepacle for antiseptic material is provided.

TELEPHONE SYSTEM.

D. L. Temple, Chicago, Ill., and C. L. Goodrum of Atlantic City, N. J., patent 989,205, Apr. 11, 1911, assigned to Stromberg-Carlson Telephone Mfg. Co., New York.

In this common battery system the cord circuit does not



have any supervisory relay. The supervisory relay 12 herein operates the clearing out lamp 34, but this supervisory relay is in the line circuit. The coil 15 of the line relay controls the line lamp 18. When the plug is inserted both coils 15 and 21 get the same amount of current and the line lamp 18 is extinguished.

POLE PROTECTOR.

V. Konopinski, Brooklyn, N. Y., patent 985,605, Feb. 28, 1911.

In this pole protecting device several metallic sleeves are placed around the lower portion of the pole. A concrete flange is placed around the sleeve at the ground line, and reinforced metallic strips are provided in this flange. Anchor posts are also provided, which surround the pole and are connected with the reinforcing strips.

MOUTHPIECE.

L. Steinberger, New York, N. Y., patent 989,076, Apr. 11, 1911.

A telephone mouthpiece is set forth herein which has the usual outer configuration, but is practically solid with the exception of holes for sound to pass through. The passages are conical, and flare in opposite directions.

From Factory and Salesroom

Conventions: Indiana, Indianapolis, May 10, 11; Arkansas, Little Rock, May 16, 17.

Practical Illustrations a Feature of New Kellogg Bulletin.

The illustrations in the latest bulletin of magneto equipment, issued by the Kellogg Switchboard & Supply Co., Chicago, are so clear and accurate that they are of great assistance to the practical man who wishes to obtain a correct idea of the construction and operation of the apparatus. Several of them are here presented, and the way in which they show up details indicates the care exercised in the preparation of this important bulletin. Any telephone man can derive a complete idea of the wiring, and many of the operating features of the drops and jacks shown in Fig. 1; while Fig. 2 clearly shows a good arrangement for supervising the work of operators.

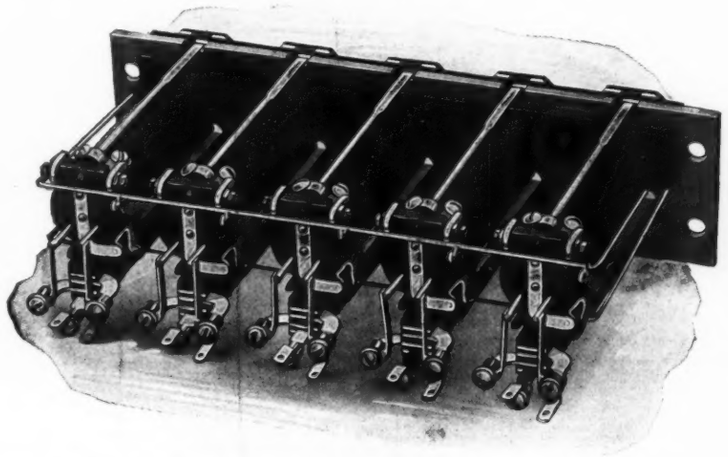


Fig. 1. Five Combined Drops and Jacks with Code Ringing Night Alarm.

Regarding cords the bulletin says:

"Switchboard cords were formerly one of the greatest problems in connection with the telephone business. The cords of former days were all made of fine copper tinsel in order to secure the necessary degree of flexibility. Such cords were well covered with several braids of cotton or linen to carry the strain, insulate the conductors and protect them from breakage and injury.

"It was found, however, that no matter how tightly the protecting covering might be woven, it would stretch with usage and allow the strain to be taken by the tinsel conductors. These would gradually break away at their weakest point, which was close up to the plug where the cord had been subjected to frequent bending. After becoming broken the severed ends of the tinsel conductors would still touch each other loosely and this resulted in the most exasperating thing in the telephone business from the patrons' standpoint, namely, a 'scratchy,' 'stuttering,' 'choppy' cord.

"The first attempt to get away from this condition was by the use of a cord employing no tinsel, but, instead, two conductors of steel piano wire coiled like a spring and arranged concentric or parallel.

"The idea was that these coiled steel conductors would stretch out without breaking, as the cord's braid became old, and thus insure a reliable connection. Experience soon pointed out one fatal drawback to this scheme in the form of the high resistance offered to the talking current by the highly tempered steel wire. Thus, while steel cords are still used by some companies in local work, they are absolutely barred by the same companies on their toll boards and toll service trunks, for which purpose the old tinsel cords with all their shortcomings and continual maintenance expense are retained.

"After trying out several designs, it was found that an almost perfect cord could be produced by using steel wires wound over braided tinsel. The steel conductors were found to be practically unbreakable, while the presence of the copper tinsel insured the lowest resistance to talking currents. Thus a cord was secured capable of giving reliable service without any attention, until the outer braids had become worn through.

Fig. 2. Keys and Line and Pilot Supervisory Lamps for Observing Service.

Fig. 3. This Cord Had Perfect Insulation After Four Years' Use.

"Experience had proven that the outer braids gave way because of rotting of the fabric, caused by cords becoming saturated with perspiration from the operator's hands. This the Kellogg company overcame entirely by treating the outer layer of their cord with a compound that works down into a glazed moisture-proof coating that leaves the cord perfectly flexible, but increases the life of the outer braid three fold. Many attempts have been made to secure like results by boiling the entire cord in wax, but this only causes the cords to ooze grease over everything in hot weather and renders them too stiff and unwieldy for use at ordinary temperatures."

Similar practical information, as clearly stated, is given

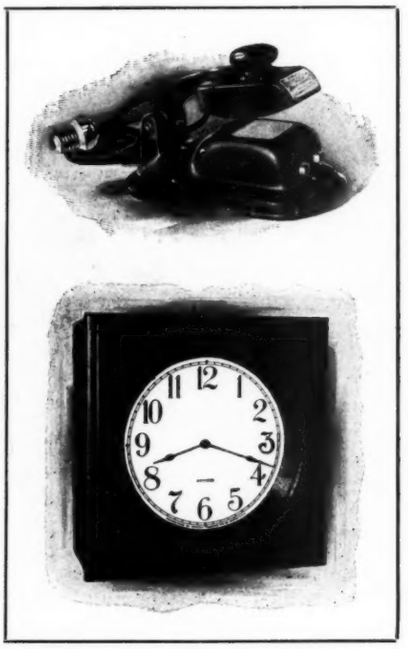
in this bulletin concerning each variety of magneto equipment sold by the Kellogg company.

"Telephone Time" Service at the Iowa Convention.

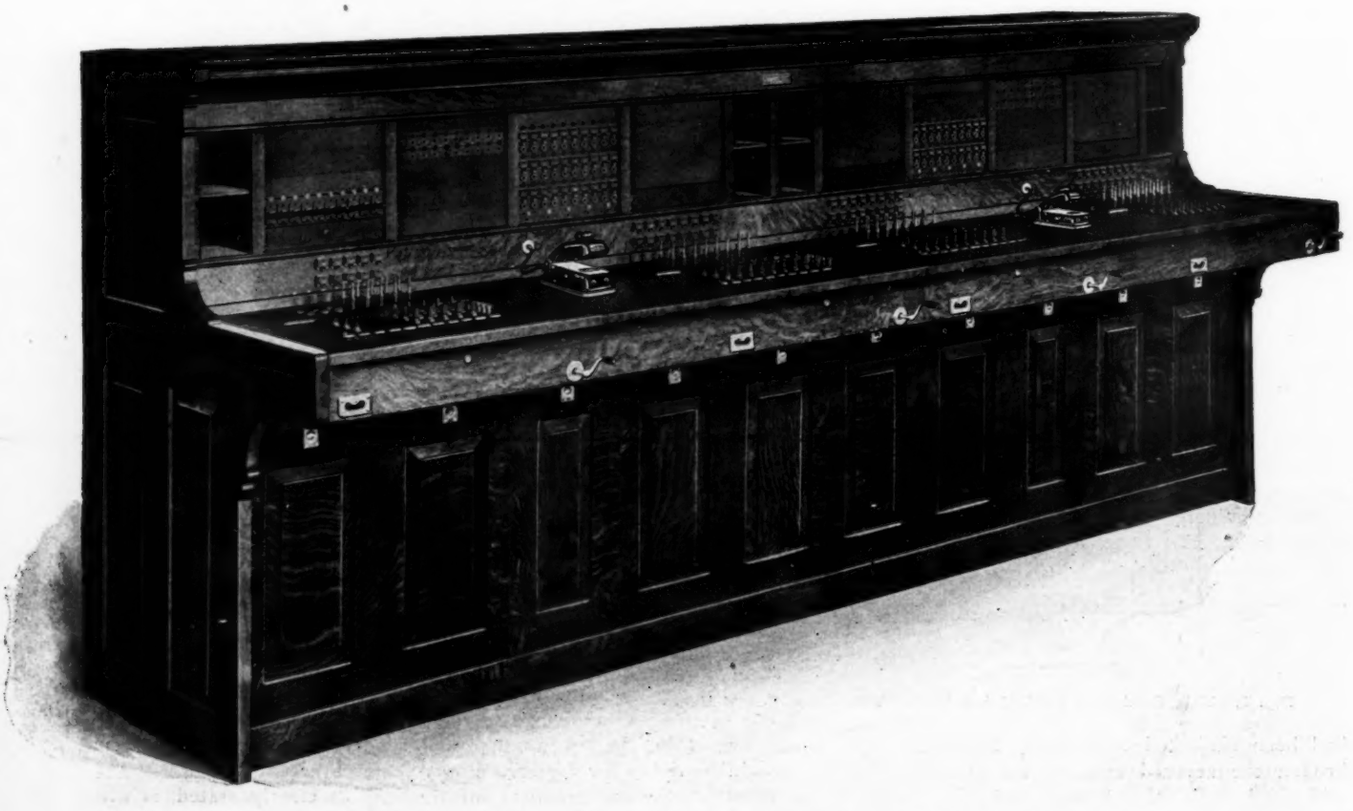
It is interesting for an actor who has been busy behind the scenes for years to take a seat in the front once in a while and look at the show as with the eyes of the people he is serving. But it is not often that a business man, and especially a telephone man, gets such an opportunity in the way it was offered at the Iowa convention, held at Fort Dodge. Here he had a chance to get on the other side of the footlights, and feel the effect of the kind of service he is furnishing.

The Wahkonsa Hotel was practically the headquarters of the convention, although the official meetings were not held in the building. This hotel is one of the best in the state of Iowa, and one of which Fort Dodge is justly proud. It is well managed and up-to-the-minute in every respect. Upon entering the guests, as they signed the register, looked up at a Monarch secondary clock operated over the lines of the Fort Dodge Telephone Co. Almost beneath the clock is the Monarch private branch exchange board. At the right hand end of the clerk's counter is a Monarch time stamp. In calling up from the room to have mail sent up, the guests talked over a Monarch telephone, and when the mail arrived each piece bore an imprint made with a Monarch stamp, showing the date and the exact time it had arrived. At dinner guests had an opportunity, while waiting for their orders, to set their watches by another Monarch clock in the dining room. But the wait was not long, for every order as it enters the kitchen has the exact minute of its receipt stamped on it with a Monarch stamp. This is one of the means the hotel uses to give the efficient service for which it now has a reputation throughout the state. If a guest had occasion to call up his home town while at the convention, the call was handled through a four-position toll board at the Fort Dodge company's exchange.

The Monarch representatives were busy during the convention meeting prospective customers and old ones. They report that there is plenty of good business in sight and during the three days closed contracts for boards at Storm Lake, Iowa; Fonda, Iowa; Gilmore City, Iowa; Newell, Iowa; Manning, Iowa.



Monarch Time Stamp and Secondary Clock.



Four Position Toll Board at Ft. Dodge, Ia., Built and Installed by the Monarch Telephone Manufacturing Co., Chicago.

The History of Copper Clad Wire.

The first recorded attempt to make copper clad steel wire took place in the early 60's, according to the Copper Clad Handbook, issued by the Duplex Metals Co., Chester, Pa. Although for over 100 years people had been suggesting various ways of uniting copper and steel, it was not until the period mentioned that Farmer and Milliken tried wrapping a strip of copper about a steel wire. American engineers in 1883 and again in the 90's made attempts to produce a copper-steel wire, in one instance at least, by electro-plating copper on steel.

The Duplex Metals Co. traces its beginning to the arrival in this country of Mr. John Ferreol Monnot between 1900 and 1905. He had been very much interested in the work of Mr. Martin in Paris, and, as the "Handbook" says: "After several years devoted to experimenting, organized the Duplex Metals Company. Prior to his discovery of the process under which this company operates in producing its copper clad, probably almost every other possible way of welding copper and steel together had been tried by Mr. Monnot, but found useless for the purpose.

"The company was organized and incorporated in November, 1905, and the Mill, at Chester, Pa., an old rolling mill, was first leased and, in 1906, bought. It is on the Delaware River and the eleven acres of land around it mean plenty of room for growth.

"The company's object from the start has been to build up a business, not to start something which could be sold out, nor to try to make high profits on a small tonnage.

"Most inventions have the same history—the first steam locomotive looked very different from the engines that pull trains at sixty miles an hour—and our first billets were little fellows, weighing say twenty pounds against the eight hundred that we can now do.

"As an example of the success of this policy, the business done in 1909 was four times that of 1908; and the business of 1910 was twice that of 1909."

The telephone is the most useful gift of science to mankind.

Iowa Company Feasts Its Salesmen.

Officers, heads of departments and salesmen of the Interstate Electric & Mfg. Co. of Sioux City, Ia., recently met at the residence of Max McGraw, president of the company and enjoyed a wild duck supper. After the conclusion of the meal a general discussion of the business followed. Later the stockholders, heads of departments and salesmen each held meetings. The following were present:

Max McGraw, president; W. S. Warfield, Jr., vice-president; L. B. Parker, secretary; W. J. McGraw, treasurer; F. D. Smith, manager; R. N. Jordan, R. H. Coomes, C. W. Hickley, C. R. McInnes, J. Hennes, F. W. Scharf, B. H. Chase, J. C. Glover, B. C. Percival, O. J. Stahl, Frank McGinnis, D. S. Chase, Valda Schaaf, Palmer Hennes.

L. M. Pignolet Brings Out New Instrument for Testing

L. M. Pignolet, 78 Cortlandt St., New York City, has just sent word to TELEPHONY that he has brought out a new, portable, D'Arsonval type, direct current volt-ammeter, with a resistance of 200 ohms for each 5 volts, instead of 100 as in the old type. This change makes it possible to measure higher resistances, and makes the instrument more adaptable for certain conditions encountered in telephone work.

The method of using the instruments is covered in a special pamphlet which gives in detail methods of testing storage batteries, dry cells, armatures, coils, lines, switchboard circuits, etc. With a Pignolet volt-ammeter, and this book, which tells in plain English how to use it, any lineman, after a few hours' study and practice, should be able to test out any line or piece of equipment in trouble, and save a great deal of valuable time in the work of repair, to say nothing of time traveling, livery, etc. Shooting trouble costs too much when a man does not know just where to look for the trouble, and has to cover several miles of line and look at all the instruments on it. It is cheaper to buy a volt-ammeter and let the man find out just what is wrong, and where to look for it before he starts.

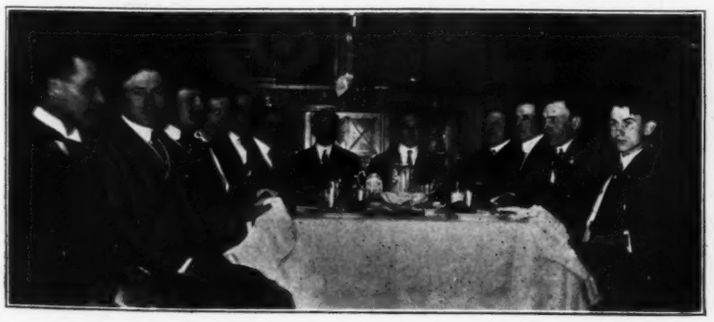
Star Expansion Bolt Co.'s San Francisco Address.

Otis & Squires of 579-581 Howard street, San Francisco, are now the western sales agents for the Star Expansion Bolt Co., New York, manufacturers of the Sebco products. At the new western headquarters a much larger and more complete stock will be carried than formerly, including Sebco expansion shields, Sebco anchors and various other products. All inquiries from the western field should be referred to Otis & Squires, who will give all specifications prompt attention.

E. C. Green Joins Staff of Walpole Rubber Co.

The Walpole Rubber Co., Walpole, Mass., announces that it has secured the services of Mr. E. C. Green. He will act in the capacity of general purchasing agent of the consolidated companies, having his headquarters at Walpole. Mr. Green was formerly associated with the company, and will no doubt be welcomed by many friends of the company upon his return.

CHESTER WILSON WHITMAN, of Providence, R. I., in sending TELEPHONY an order for space in its Directory of the Telephone Industry, advises that he is prepared to furnish engineering plans, specifications, apparatus and supplies for telephone and signal service; also any special apparatus or devices not already on the market. Mr. Whitman and his associates are now developing two or three new specialties which they expect to have ready for the market in the near future. Their field of work embraces the New England states, Massachusetts and Connecticut, with agencies at Woonsocket, Pawtucket, Westerly, Attleboro, Taunton, Fall River and New Bedford.



Office Heads and Sales Force of Interstate Electric & Mfg. Co., of Sioux City, Iowa, at Dinner and Smoker.

In the Rural Line Districts

The Burt County Telephone Co. has promised a reduction in rates the first of the year.—*Fremont (Neb.) Tribune.*

Jacob Butzbach, A. M. Stewart, Will Weber and Phil Hiler, four officers of the Bainbridge Telephone Co., went to Dowagiac on business Wednesday.—*Watervliet (Mich.) Record.*

President H. B. Hill was fixing up the telephone lines on No. 6 recently and everything is in shipshape. H. G. Hendrickson also put No. 4 in fine shape and now we have a system second to none.—*Norway Correspondence Kenton (Ohio) Democrat.*

The Taos Telephone Co. is preparing for better and more perfect service, according to Manager Ellis. The line to Cerro will soon be in operation and this will give easy communication with San Luis valley.—*Taos (New Mexico) News.*

In the city court yesterday morning Mayor Ashcraft condemned thirty-four pints of whisky which were seized in the Citizens' Telephone Exchange, operated by Mrs. C. Chandler. Mrs. Chandler, the alleged owner of the whisky, has disappeared and could not be found. The whisky will be destroyed, unless the owner appeals, in five days.—*Florence Dispatch in Montgomery (Ala.) Advertiser.*

Jake Wiebe and Ben Kingman have started the new telephone office.—*Delavan Letter in Herington (Kansas) Sun.*

Frank Thomas and Miss Grace Collins were here from Miami Sunday. Mr. Thomas is lineman for the Pioneer Telephone Co. and was looking for trouble over the line between here and Miami which has been giving trouble of late. All difficulties were removed.—*Welch (Okla.) Watchman.*

The North Prairie Telephone Co. held a meeting at A. C. Houvenagle's Tuesday evening and decided to finish their line that was started last summer. They will put the line up Thursday.—*North Prairie Correspondence Muscatine (Ia.) Journal.*

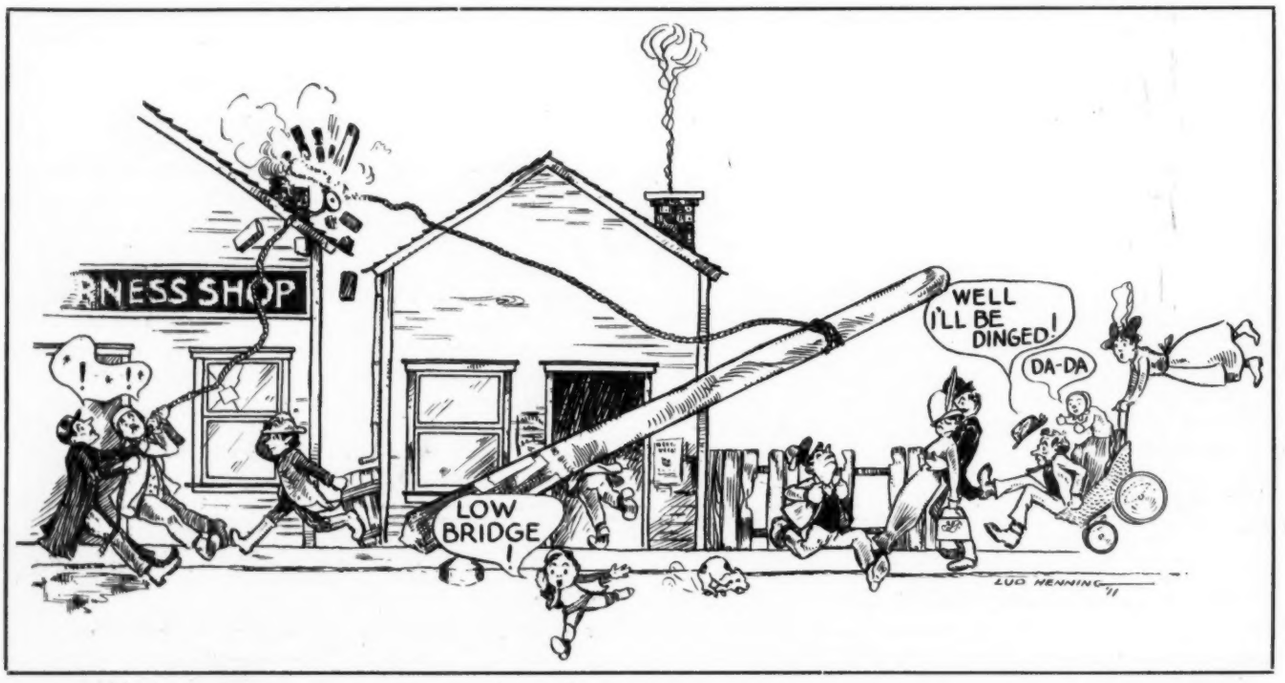
Henry Bremmer was awarded the job of taking care of the Fennimore Mutual Telephone Co. exchange here by the directors at their meeting last Wednesday, and will take charge soon.—*Fennimore (Wis.) Times.*

The telephone line has the appendicitis again, and seems to have it very bad. However, bills for rental are coming in.—*Phelps News in Monmouth (Ill.) Atlas.*

The new telephone directories are out at Kulm.—*Fargo (N. Dak.) Forum.*

A new telephone line was run in from the west and connected with the town central this week.—*Wakita Letter Pond Creek (Okla.) Vidette.*

Free telephone service between La Plata and Kirksville has ceased on account of the sleet which broke down all of the rural lines. Kirksville has decided not to rebuild any of their rural lines and have given them to the farmers. This includes the free service line we formerly used between La Plata and Kirksville which we owned jointly. Kirksville refused to rebuild their part of this line.—*La Plata (Mo.) Press.*



Telephone men cut down a large pole in front of the county office Monday afternoon, and hitched a rope and tackle onto a chimney on the Richwine harness shop building to lower it to the ground. Everything went well until the pole had nearly reached the ground, when the strain on the chimney became too great and it came toppling down to the sidewalk. The boys will know better next time than to hitch a rope onto a chimney in lowering poles to the ground.—*Hixon (Mich.) Mail.*

Walter Miltenberger has bought stock in the Pleasant Home Telephone Co.—*Highland Center News Beatrice (Neb.) Express.*

The meeting of the stockholders of the Laughlin Secret Call Telephone Co. yesterday afternoon at the plant was a stormy affair. There was quite a large attendance of Clay Center stockholders and also a big delegation from Clyde, and as many of them were loaded down with stock purchased at a greatly reduced rate they were able to heavily outvote the local contingent.—*Clay Center (Kansas) Republican.*

Arthur Parks, manager of the Heyworth Telephone Exchange, is making preparation to rebuild several miles of the country lines this spring and summer.—*Bloomington (Ill.) Bulletin.*